

Drive EverGreen 2.0 Incentive Program: Final Evaluation Report

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I. Executive Summary

Background

Sonoma Clean Power (SCP)—the “community choice” not-for-profit electricity provider for Sonoma and Mendocino counties in Northern California—is committed to investing in renewable energy projects to reduce greenhouse gas (GHG) emissions. To this end, SCP created the Drive EverGreen program to increase awareness of electric vehicles (EVs), reduce the cost of owning and operating EVs and eliminate impediments to EV adoption. The first Drive EverGreen pilot (Drive EverGreen 1.0) took place at the end of 2016; SCP then expanded the scope and size of the program for its second iteration, Drive EverGreen 2.0, which ran from 8/8/2017 through 11/30/2017. This timeline included a one-month extension to support customers who lost property in the Northern California wildfires. The Center for Sustainable Energy (CSE) partnered with SCP to administer and evaluate both iterations of the program.

Drive EverGreen 2.0 lowered the cost of acquiring EVs by offering SCP customers incentive certificates redeemable for discounts on new and used EVs at the time of purchase. The standard incentive amount was \$2,000; low-income customers enrolled in either the California Alternate Rates for Energy (CARE) or Family Electric Rate Assistance (FERA) programs were eligible to receive \$3,500. SCP also negotiated partnerships with seven original equipment manufacturers (OEMs), also known as auto manufacturers, and local dealers to provide additional discounts on 10 new eligible EVs. Used vehicle incentives were a new feature of the second iteration of the program; eligible models were available at participating Nissan, BMW and Tesla dealerships. The standard incentive amount for used EVs was \$1,000, with CARE/FERA participants eligible to receive \$2,000. SCP also copromoted a free EV charger incentive program and its EverGreen service plan, which guarantees the provision of 100% local, renewable energy to customers. This evaluation report summarizes Drive EverGreen 2.0, evaluation activities and recommendations to inform future programs.

Outcomes

In total, the program received 1,516 applications, with 1,354 certificates being approved. Overall, 567 (42%) participants redeemed their certificates for eligible EVs. CARE/FERA participants made up 10% of the overall certificates issued for the program (138), 31% of those certificates were redeemed. Two-thirds (67%) of incentivized vehicles were leased and 96% were new vehicles. The most commonly incentivized vehicles were the Chevrolet Bolt, Nissan LEAF, Volkswagen e-Golf and Chevrolet Volt.

Evaluation Objectives and Methods

To evaluate the impacts of the Drive EverGreen 2.0 program, CSE and SCP developed the following objectives.

1. Measure the short-term impact of the Drive EverGreen 2.0 program on EV awareness and adoption in Sonoma and Mendocino counties.
2. Assess the short-term impact of the Drive EverGreen 2.0 program on awareness of the SCP brand and EverGreen program participation.

3. Measure the short-term impact of the Drive EverGreen 2.0 program on GHG emissions and petroleum usage in Sonoma and Mendocino counties.
4. Understand the upfront cost savings received by Drive EverGreen 2.0 program participants.
5. Understand how programmatic changes in Drive EverGreen 2.0 impact the goals of the program.
6. Evaluate program design and mechanics to inform successful future iterations of the program.

Program evaluation methods included an analysis of application data, a survey of certificate recipients, partner dealer interviews, emissions reduction estimations and analysis of SCP data related to program enrollment and marketing activities.

Evaluation Results

Key findings include the following.

- Of the certificates issued, 42% were redeemed for the acquisition of an eligible EV, an increase of five percent from Drive EverGreen 1.0. This increase likely was due to the increase in model availability in the program.
- Sonoma County residents received 95% of certificates issued, with 65% of certificates concentrated in the cities of Santa Rosa, Sebastopol and Petaluma.
- CARE/FERA program participation rate decreased by 9% from Drive EverGreen 1.0.
- CARE/FERA respondents were significantly more likely than non-CARE/FERA respondents to indicate cost concerns when discussing barriers or factors involved in acquiring EVs.
- CARE/FERA participants were significantly less likely to own their homes, were more likely to identify as female and had lower average education and income levels.
- Certificate redeemers were significantly more likely to own their homes and had significantly higher education and income levels than non-redeemers.
- Certificate redeemers rated reducing environmental impacts and increased energy independence as their most important motivators for adopting EVs.
- Certificate non-redeemers rated range anxiety and vehicle price as their most significant barriers.
- Out of 94 certificate non-redeemers who indicated that they purchased a vehicle without using a Drive EverGreen incentive, 77% of them reported purchasing an EV.
- The most common reason for not redeeming certificates were the program ending (16%), the incentives were not enough for participants to afford a vehicle (12%), they changed their mind (8%) or the dealer was out of inventory (8%).
- Certificate redeemers rated the incentives they received as very important to their decisions to acquire EVs; 77% stated they would have not adopted an EV without the program.
- Approximately 436 EVs were added to Sonoma and Mendocino county roads by the presence of the program.
- A majority (81%) of certificate redeemers replaced or planned to replace a vehicle as a result of acquiring an EV. Around half (51%) stated they replaced or will replace a gasoline-fueled vehicle, with another 20% replacing a conventional hybrid or diesel vehicle. Nearly all (95%)

respondents stated they would use their EV as their primary vehicle. Those who replaced a gasoline-fueled vehicle reported an average of \$35.95 in fuel cost savings per week.

- The average certificate redeemer who acquired a new EV received \$11,093 worth of discounts; those who opted for a used vehicle averaged \$1,568 in discounts.
 - Discounts varied significantly by available EV, and models with higher average cost savings were not always the most popular vehicles in the program.
 - Lessees received significantly higher discounts than those who purchased their EVs, most likely due to lessors' ability to claim the federal EV tax credit.
- Certificate redeemers ranked charging at home overnight as the most common form of EV charging, with 45% of respondents self-reporting increases in their electric bills.
- Less than half (42%) of certificate recipients indicated they knew about EVs, but didn't know enough to make a decision about getting one, prior to participating in Drive EverGreen.
- The AFLEET tool estimates that incentivized vehicles will reduce GHG emissions by 4,985 metric tons of CO₂-equivalent over the next three years. Based on assumptions made in the estimation of GHG reductions, sensitivity testing conducted presents a range of GHG reductions between 3,375 and 6,481 metric tons of CO₂-equivalent.
- GHG emission reduction estimates indicate an average of 8.79 metric tons of savings per vehicle incentivized, .31 metric tons of savings per \$100 of total program expenditure, and .42 metric tons of savings per \$100 of SCP incentive dollars spent.
- The AFLEET Tool estimated a displacement of 9,672 barrels (approx. 406,224 U.S. gallons)¹ of petroleum over the next three years. This equates to approximately .82 barrels (approx. 34 U.S. gallons) per \$100 of total program expenditure, .60 barrels (approx. 25 U.S. gallons) per \$100 of SCP incentive dollars spent and 17.06 barrels (approx. 717 U.S. gallons) per incentivized vehicle.
- Approximately three-quarters (76%) of certificate redeemers took advantage of the free EV charger incentive program. Only 4% enrolled in EverGreen service, however 37% of survey respondents reported they were already on the EverGreen service rate.
- The most commonly identified ways in which certificate recipients first heard about the program were direct mailers (30%), word of mouth (23%) and newspapers (13%). Social media and other online marketing activities were not found to be effective in raising awareness of the program.
- In total, 57 (4%) certificate recipients were repeat customers from Drive EverGreen 1.0. Four people redeemed certificates in both programs.
- Certificate redeemers identified increased community engagement (20%) and more vehicle options (13%) as their most common recommendations for program improvement. Certificate non-redeemers identified more vehicle options (26%), and wider dealership selection (24%) as their most common recommendations for program improvement.
- Participating dealers and manufacturers expressed satisfaction with the program and recommended streamlining the rebate process to make it easier for customers to redeem and dealers to process reimbursements.

¹ 1 barrel = 42 U.S. gallons per the US Energy Information Administration. Energy Units and Calculators Explained. https://www.eia.gov/energyexplained/index.cfm?page=about_energy_units. Accessed 4/12/2018.

Recommendations

Recommendations, further detailed in this report, include the following.

1. Engage more dealers in a wider geographic region
2. Continue to expand model availability and used vehicle options
3. Increase rebate amounts and outreach activities to spur CARE/FERA participation
4. Increase access to educational materials
5. Add a concurrent financial incentive for enrolling in the EverGreen rate plan
6. Extend the program timeline
7. Assist dealers in program preparation and engage industry stakeholders (e.g., trade associations) in the dealer outreach process
8. Use a more sophisticated information technology platform
9. Consider marketing and outreach strategies that target a broader audience
10. Provide dealers and customers with more information on charger incentives
11. Promote average cost savings and vehicle ranges in promotional materials to overcome common barriers
12. Examine the geographic location of program participants in relation to SCP market share
13. Collect redeemers' energy consumption data to analyze impacts on utility bills and the grid
14. Consider additional methods for assessing direct and spillover program effects
15. Use caution when comparing GHG reduction estimates to other programs due to the variability in factors that impact savings (e.g., grid mix, consumer demographics)

Additional details about the program, its outcomes and findings, and recommendations are provided in this report to inform SCP's future efforts to promote clean vehicles through the Drive EverGreen program.

II. Program Description

Drive EverGreen Overview

Sonoma Clean Power (SCP) is a “community choice,” public electricity provider for Sonoma and Mendocino counties in Northern California. It is a not-for-profit public agency that is independently run in collaboration with participating cities in Sonoma and Mendocino counties (e.g., Santa Rosa, Fort Bragg). SCP provides consumers the option of purchasing clean electricity (90% carbon-free²) at competitive rates from renewable energy sources such as solar, wind, geothermal as well as carbon free hydropower, as well as a 100% local, renewable energy product, EverGreen. SCP partners with Pacific Gas and Electric (PG&E) to use its grid infrastructure to reliably deliver energy to customers. In addition, SCP invests in renewable energy projects to reduce greenhouse gas (GHG) emissions.³

As of July 31, 2017, an estimated 5,000 EVs⁴ were on the road in Sonoma and Mendocino counties, including plug-in hybrid electric vehicles (PHEVs), all-battery electric vehicles (BEVs) and fuel-cell electric vehicles (FCEVs). Despite this progress, gasoline-fueled vehicles continue to be among the largest sources of GHG emissions, with 53% originating from on-road transportation in Sonoma County alone.⁵ SCP views transportation electrification as critical to reducing GHG emissions and has set ambitious goals to put 10,000 EVs on Sonoma and Mendocino county roads by 2020 and 100,000 by 2030. To meet these goals, SCP created the Drive EverGreen program. This program is designed to

- Increase awareness of EVs
- Reduce the cost of owning and operating EVs
- Eliminate impediments to EV adoption

With a budget of approximately \$1.6 million, SCP significantly lowered the cost of acquiring EVs by offering its customers incentives for eligible EVs. The standard incentive amount was \$2,000; low-income customers enrolled in either the California Alternate Rates for Energy (CARE) or Family Electric Rate Assistance (FERA) programs were eligible to receive \$3,500. SCP customers applied on SCP’s website for a certificate that they would then present at participating dealerships for a point-of-sale discount on the cost of an EV. SCP also negotiated partnerships with seven OEMs and local dealers to provide additional discounts on new eligible EVs.

² Sonoma Clean Power. “Power Sources.” <https://sonomacleanpower.org/about-scp/power-sources/>. Accessed 3/14/2018.

³ Sonoma Clean Power. “About SCP.” <https://sonomacleanpower.org/about-scp/>. Accessed 8/14/2017.

⁴ Estimated using CVRP rebate statistics and historic participation rates for Sonoma (72%) and Mendocino (56%) counties.

Rebate data: Center for Sustainable Energy (2018). California Air Resources Board Clean Vehicle Rebate Project, Rebate Statistics. Data last updated March 13, 2018. Retrieved March 14, 2018 from <https://cleanvehiclerebate.org/rebate-statistics>.

Participation rates: Williams, B., Anderson, J., Santulli, C., and Arreola, G. (2015). Clean Vehicle Rebate Project Participation Rates: The First Five Years (March 2010 – March 2015). Center for Sustainable Energy, San Diego CA, October. <https://cleanvehiclerebate.org/eng/content/cvrp-participation-thru-2015-03>.

⁵ Regional Climate Protection Authority. Greenhouse Gases. <http://rcpa.ca.gov/data-and-reports/sonoma-county-greenhouse-gas-inventory/>. Accessed 4/12/2018.

Used vehicles were also added to the program and available at participating Nissan and BMW dealers, and at Tesla. The standard incentive amount for used EVs was \$1,000, with CARE/FERA participants eligible to receive \$2,000.

The program accepted applications from 8/8/2017 through 11/30/2017. Initially the program was designed to run through 10/31/2017, however local wildfires prompted SCP to extend the program for an additional month.

In addition to the vehicle incentives, SCP copromoted a free EV charger incentive program and its EverGreen service plan, which guarantees the provision of 100% local, renewable energy to customers. By acquiring an EV and enrolling in these concurrent programs, certificate redeemers could significantly lower their transportation-related emissions.

III. Evaluation Plan

Evaluation Objectives and Guiding Questions

Drive EverGreen 2.0 was the second iteration of the program. The Drive EverGreen 2.0 evaluation addressed some of the same objectives as Drive EverGreen 1.0, while including new objectives related to the impact of programmatic changes, cost analysis and measurement of how many participants took advantage of the concurrent incentives offered.

Evaluation Objectives

1. Measure the short-term impact of the Drive EverGreen 2.0 program on EV awareness and adoption in Sonoma and Mendocino counties.
2. Assess the short-term impact of the Drive EverGreen 2.0 program on awareness of the SCP brand and EverGreen program participation.
3. Measure the short-term impact of the Drive EverGreen 2.0 program on GHG emissions and petroleum usage in Sonoma and Mendocino counties.
4. Understand the upfront cost savings received by Drive EverGreen 2.0 program participants.
5. Understand how programmatic changes in Drive EverGreen 2.0 impact the goals of the program.
6. Evaluate program design and mechanics to inform successful future iterations of the program.

To measure the impact of Drive EverGreen 2.0 on these stated objectives, the evaluation was guided by the following evaluation questions.

Evaluation Questions

- What programmatic elements were changed for Drive EverGreen 2.0?
- What were the program's short-term impacts on EV adoption?
- What average vehicle cost savings did program participants receive?
- What were the program's short-term impacts on reductions in GHG emissions and petroleum use?
- What impact did changes in program structure have on EV adoption?
- What were the program's short-term impacts on EV awareness and the Drive EverGreen and Sonoma Clean Power brand?
- What types of outreach and awareness activities were effective in raising awareness of, and participation in, the program?
- How many program participants took advantage of the free EV charger incentive program and EverGreen service plan?
- How many repeat customers were there from Drive EverGreen 1.0?
- What lessons were learned from the 2.0 administration of Drive EverGreen, and how can the program be improved in the future?

IV. Methodology

The evaluation team used a mixed-methods approach, collecting quantitative and qualitative data, with an emphasis placed on quantitative data. The following section details the data sources used, collection methods and analysis procedures.

Definitions

To ensure accurate interpretation of results, please see Table 1 for a list of common terms used for differing program participant populations in this report.

Table 1. List of program participant terms and definitions

Term	Definition
Applicants	Individuals who applied for Drive EverGreen incentive certificates
Certificate recipients	Individuals who were approved for Drive EverGreen incentive certificates, regardless of whether they acquired EVs
Certificate redeemers	Individuals who received Drive EverGreen incentive certificates and redeemed them for the acquisition of program-eligible EVs
Certificate non-redeemers	Individuals who received Drive EverGreen incentive certificates, but did not redeem them for the acquisition of program-eligible EVs

Application Data

Data from approved applications were used to address multiple evaluation questions. Application data used in this evaluation includes the following.

- Applicant account and contact information
- Date of application
- CARE/FERA status
- Certificate redemption status (denied, un-redeemed, redeemed)
- Vehicle model acquired
- Purchase/lease status
- New/used status
- Purchase/lease date
- Lease terms (length of lease and approved mileage) if applicable
- Amount of incentive and discounts

These data sets were used for calculating program totals, determining representativeness of survey data and conducting emissions calculations and cross-program analysis.

Survey Data

The Drive EverGreen 2.0 program closed on November 30, 2017. Participating dealers were given until December 15, 2017 to submit all relevant documentation for reimbursement. After this administration period, the survey was distributed via email to all 1,333 certificate recipients, with certificate redeemers receiving a different version than non-redeemers. Survey results were collected between 12/18/2017 and 1/21/2018. Reminder emails were sent each week during the window to non-respondents. If two or more certificate recipients shared an email address, only one survey invitation was sent to that email address. In cases where participants received two certificates, and redeemed only one, they received the survey questions specific to redeemers. As an incentive for participation, respondents were given the option to enter a drawing for one of ten \$30 Amazon gift cards. Overall, the survey received a 51% response rate (693 responses). Out of the 693 survey respondents, 57 were CARE/FERA participants (23 certificate redeemers/34 certificate non-redeemers).

Table 2. Summary of survey invitations and responses

Population	Number of Invitations Sent	Number of Responses Received	Response Rate
Certificate redeemers	563	340	60%
Certificate non-redeemers	770	353	45%
Total	1,333	693	51%

Depending on redemption status, respondents received questions designed specifically to measure topics related to the evaluation. Skip logic was used to display only questions relevant to the particular population. The following table shows the topics explored with each survey audience. A copy of the survey instrument can be found in Appendix B.

Table 3. Summary of survey topics by audience

Survey Topic	Certificate Redeemers	Certificate Non-Redeemers
Motivations/enablers of adoption	X	X ⁶
Importance of the incentive and dealer discounts in the decision/ability to adopt (or not adopt) an EV	X	X
Transportation choices in the absence of the incentive program	X	X
Household vehicle composition	X	X
EV usage (e.g., miles driven, rideshare)	X	
Self-reported fuel and energy cost savings	X	
Effectiveness of outreach and marketing	X	X
Awareness of EVs, and the SCP and Drive EverGreen brands	X	X
Participant satisfaction and feedback	X	X
Barriers to adoption		X

⁶ Topic was only explored with certificate non-redeemers who specifically stated they acquired an EV outside of the Drive EverGreen 2.0 program.

Survey analysis was completed using both STATA and R statistical software packages and consisted of three primary steps.

1. Cleaning and preparation of data for analysis

Survey data went through a multistep quality control procedure to ensure that data were exported correctly, accurately coded and cleaned, and checked for duplicates. Relevant application data were appended to survey results using a unique voucher ID to link individual information across the two sources. Numeric survey questions were reviewed for accuracy and validity.

2. Determining representativeness of survey data

Survey data were examined to determine the extent to which survey respondents were representative of all certificate recipients. These findings were used to determine if survey responses should be adjusted using survey weights to ensure that results accurately represent the program. The dimensions examined were the proportion of redeemed and unredeemed certificates, CARE/FERA rate eligibility and geographic distribution measured at the city and ZIP code levels. The analysis included a series of Pearson's chi-square tests to ensure the distributions of these characteristics were independent of whether the individual took the survey.

Chi-square test results showed that certificate redeemers were over-represented in the survey population (60%) when compared to the total program population (42%). While this difference was statistically significant, redemption status triggered very different lines of questioning in the survey that were not applicable to both audiences, making it inappropriate to weight the entire survey based on this status. No other statistically significant differences were found between survey respondents and the total program population. Table 4 shows the p-values⁷ obtained from the Pearson's chi-square tests conducted to compare the respondent sample to the approved certificate population.

Table 4. Survey sample vs. total program population

Dimension	P-value
Certificate redemption status	0.001
CARE/FERA status	0.151
City	1.000
ZIP code	1.000

To further address representativeness, redeemed survey respondents were compared against the population of all redeemed program participants. The dimensions examined were: vehicles purchased and leased, vehicle model, CARE/FERA rate eligibility and geographic distribution measured at the city and ZIP code levels. Findings showed no statistically significant differences between these populations.

⁷ The authors use a 95% confidence interval to determine statistical significance. Thus, in chi-square tests, a p-value less than 0.05 indicates statistically significant association.

Table 5. Redeemed survey responses vs. redeemed program population

Dimension	P-value
Purchase vs lease	0.476
Vehicle model	0.717
CARE/FERA	0.646
City	1.000
ZIP code	1.000

The lack of significant differences found between the survey and program population, coupled with a high survey response rate from both redeemers and non-redeemers, suggest that survey respondents are reasonably representative of the overall program participants and the survey data can be used without adjusting results through post-survey weights.

3. Descriptive statistics and significance testing

Descriptive statistics (e.g., frequencies, means) were calculated for all survey questions. Results were split into two sets of subgroups: redeemers vs. non-redeemers, and CARE/FERA customers vs. non-CARE/FERA customers. Where relevant to the evaluation questions, differences between these subgroups were tested for statistical significance. Survey questions that produced categorical variables (e.g., yes/no) were tested using Pearson's chi-square tests to determine differences in response frequency. Survey questions that produced continuous variables (e.g., income, costs) were tested using two-sample T-testing that assumed unequal variance.

GHG Emission and Petroleum Use Estimates

GHG emission reductions and petroleum displacement attributable to the Drive EverGreen 2.0 program were estimated using the Alternative Fuel Life-Cycle Environmental and Economic Transportation (AFLEET) Tool 2017,⁸ based on inputs and assumptions derived from application and survey data. In the Drive EverGreen 1.0 evaluation, emissions were calculated using the AFLEET Tool as well as a methodology created by the California Air Resources Board (CARB). This second method was not used in the evaluation of Drive EverGreen 2.0 due to the addition of 20 used EVs being incentivized. The CARB model utilizes emission factors based on new vehicle models and therefore is not suitable for used vehicles.

The AFLEET Tool provides annualized estimates of GHG emissions and petroleum use for a specified fleet of vehicles from well-to-wheels, which calculates petroleum used and emissions created through vehicle use as well as fuel extraction, production and distribution. To estimate GHG emission reductions and petroleum displacement attributable to the program, two fleets of vehicles were analyzed: 1) the fleet of incentivized vehicles on the road at the end of the program (adopted fleet) and 2) the fleet of vehicles that *would have been* on the road had the program not existed (alternate fleet). The difference between

⁸ The AFLEET Tool was developed by Argonne National Laboratory for the Department of Energy's Clean Cities Program. Based on assumptions input by the user, it produces estimates of petroleum use, greenhouse gas emissions and tailpipe air pollutant emissions for a fleet of vehicles. It uses data from Argonne's Greenhouse gases, Regulated Emissions and Energy use in Transportation (GREET) fuel-cycle model and the Environmental Protection Agency's Motor Vehicle Emission Simulator (MOVES).

the two fleets equals the total annual GHG emission reductions and petroleum displacement. This analysis included the following steps:

1. Assigning an adopted fleet and alternate fleet vehicle profile to each survey respondent
2. Calculating annual GHG emission and petroleum use estimates of each fleet using the AFLEET Tool.
3. Scaling up the totals for each fleet to represent all certificate redeemers⁹
4. Subtracting adopted fleet totals from alternate fleet totals
5. Multiplying difference in annual estimates up to represent total savings over the program life of the adopted fleet (three years)¹⁰

The assigned vehicle profiles that were input to the AFLEET Tool specified customer electric generation mix based on SCP service option, vehicle fuel type, and annual fuel usage determined by self-reported vehicle miles traveled (VMT) and fuel economy¹¹ estimates. Table 6 specifies how vehicle characteristics were assigned for the adopted and alternate fleets.

Table 6. Sources used to determine vehicle characteristics used in fleet profiles

Vehicle Characteristic	Adopted Fleet Source	Alternate Fleet Source
Fuel type	Application data	Based on response to survey questions 13, 16 and 18 (Appendix B)
Annual VMT	Calculated from response to survey question 24 (Appendix B)	
Fuel economy	Estimated for vehicle specified in application	Estimated based on response to survey questions 13, 16 and 18 (Appendix B)

The alternate fleet vehicle profiles were derived from responses to survey questions that asked respondents to indicate the type of vehicle they would be using had the Drive EverGreen 2.0 program not existed. Each certificate redeemer was assigned an alternate fleet fuel economy as delineated in Table 7. Respondents who indicated they would have purchased/leased the same vehicle they obtained through Drive EverGreen had the program not existed were assigned EPA estimated fuel economy for the model specified in the application data. Respondents who indicated they would have purchased a different electric or hybrid vehicle had the program not existed were assigned an average fuel economy based on EPA estimates of models of the indicated fuel type for model year 2017. Respondents who would have purchased a nonhybrid gasoline-fueled vehicle were assigned the EPA adjusted fuel economy of 2017 cars, which provides the best estimate of real world performance. Respondents who would have continued using a vehicle they already owned without the program were assigned an

⁹ Because not all participants responded to the survey, alternate fleet emissions estimates had to be scaled up to represent the entire certificate redeemer population. To do this, emissions estimates were multiplied by the inverse of the survey response rate for each combination of new/used, technology type (BEV/PHEV) and SCP rate (CleanStart/EverGreen).

¹⁰ The program life of the adopted fleet was determined by using the most common vehicle adoption option, a 36-month lease, which characterizes 67% of certificate redeemers. After this period, assumptions made on vehicle use and grid make-up become less reliable. This method also aligns more closely to state agencies like CARB, who have shifted from 15-year estimates to 30-month estimates based on program ownership requirements as outlined in the proposed Fiscal Year 2017-18 funding plan.

https://www.arb.ca.gov/msprog/aqip/fundplan/proposed_1718_funding_plan_final.pdf. Accessed 4/18/18.

¹¹ All fuel economy estimates were derived from EPA Fuel Economy data provided at <https://www.fueleconomy.gov>. Accessed 4/18/18

average fuel economy based on EPA estimates of the indicated technology type, body style and model year of their vehicle.

Table 7. Alternate fleet fuel economy assignments by survey response

Response Selected	Fuel Economy Assignment
Purchased/leased the same all-battery EV I got through Drive EverGreen	Varied by respondent; based on vehicle purchased/leased through Drive EverGreen
Purchased/leased a different all-battery EV	33 kWh/100 mi
Purchased/leased a plug-in hybrid EV	Electric mode (40%): 46 kWh/100 mi Gasoline mode (60%): 32 MPG
Purchased/leased a conventional hybrid	36 MPG
Purchased/leased a nonhybrid gasoline-fueled vehicle	29 MPG
Continued using a vehicle I already owned	Varied by respondent; based on technology type, body style and model year specified in survey question 18 (Appendix B)
Other	Varied by respondent, not included in the GHG calculations (n=19)

The cost of achieving GHG emission reductions and petroleum displacement was then calculated using two cost metrics.

- Per \$100 of Drive EverGreen incentive dollars spent (\$1,178,500)
- Per \$100 of total program funds allocated, including incentive dollars, marketing/outreach, program administration costs and consultation (\$1,617,090.78)

The GHG emissions saved and petroleum displaced per \$100 dollars spent over the program life of the adopted fleet was calculated as

$$\frac{\text{Estimated annual GHG emission reductions and petroleum displacement} \times 3 \text{ years}}{\text{Cost metrics} / \$100}$$

Several assumptions were made to estimate GHG emission reductions. These assumptions are delineated in Table 8, along with sensitivity tests performed for each assumption.

Table 8. Summary of assumptions used to estimate GHG reductions and sensitivity testing performed

Assumption	Sensitivity Test Performed
Fuel economies assigned for the alternate fleet accurately reflect the fuel economy that would have been achieved in the program's absence	±10% fuel economy per vehicle in the alternate fleet
Survey respondents provide accurate estimates of the number of miles they will be driving their incentivized EVs AND their mileage would be the same had the program not existed	±10% annual VMT per vehicle in the adopted and alternate fleet
Survey responses accurately reflect all certificate redeemers	±5% total GHG emissions for alternate fleet
BMW i3 RExs are operated in 100% electric mode	-10pp electric mode per vehicle
PHEVs are operated in 40% electric mode	±10pp electric mode per vehicle
Unspecified portion (10%) of the SCP CleanStart Electricity Portfolio is properly represented by the modified California mix from the Draft CA-GREET 3.0 Supplemental Document (23.2% renewable, 62.8% natural gas, 0.4% coal, 9.0% nuclear power, 3.4% biomass, 1.1% residual oil) ¹²	Adjust unspecified portion of electricity portfolio to 100% renewable energy and to 100% coal

Additional Information Sources

Additional data used for this evaluation was obtained by several sources.

1. Dealership interviews
 - a. Qualitative interviews were conducted with representatives from five of the seven participating dealerships and one owner of multiple dealerships. The analysis team did not attempt to contact Tesla for an interview because no used Tesla vehicles were incentivized. Phone interviews were conducted between 12/8/2017 and 12/21/2017 and focused on the dealership experience administering the program and feedback for program improvement. Each interview was conducted by a CSE research analyst, while another analyst took notes (no recordings were made). See appendix C for the interview protocol used in these interviews. Notes taken during the interviews were reviewed and characterized into main themes.
2. Data collected from Drive EverGreen 1.0
 - a. Survey and program data from Drive EverGreen 1.0 was used to compare with Drive EverGreen 2.0.
3. Free EV charger incentive program and EverGreen service rate data
 - a. These data facilitated analysis of redeemers who concurrently took advantage of SCP's free EV charger incentive program and/or enrolled in their 100% renewable EverGreen

¹² California Air Resources Board. Draft CA-GREET 3.0 Supplemental Document and Tables of Changes. https://www.arb.ca.gov/fuels/lcfs/lcfs_meetings/11062017greet_supp.pdf. Accessed 4/16/2018.

service plan. Participants were matched across the three programs using PG&E account numbers.

4. Marketing and outreach data

- a. SCP provided data and analytics on their various marketing and outreach activities used to promote the program. Data were analyzed in relation to program applications received.

V. Results

What programmatic elements were changed for Drive EverGreen 2.0?

Program Changes for Drive EverGreen 2.0

Based on the results of Drive EverGreen 1.0 and internal SCP planning, several changes were implemented for Drive EverGreen 2.0. To address barriers customers voiced after the initial pilot, SCP expanded its OEM and dealer partnerships to increase the number of incentive-eligible EV models and created collateral to improve transparency for customers on where their cost savings were coming from. SCP also enhanced dealer trainings and created educational materials for consumers to further build awareness of the benefits of EV ownership. Incentive levels were reduced by \$500 for standard certificate recipients and by \$1,500 for CARE/FERA participants. Used vehicle incentives were made available to all program participants as opposed to being initially reserved for low-income customers. Three participating dealers (Hansel BMW, Jim Bone Nissan, Tesla Motors) offered used versions of the Nissan LEAF, Tesla Model S, Tesla Model X and BMW i3.

Initially, the program timeline was meant to align with that of Drive EverGreen 1.0, however SCP extended the program to help the community recover lost property due to the Northern California wildfires. Certificates were limited to one per person. Table 9 accounts for the key program changes implemented for Drive EverGreen 2.0. Evaluation of the impacts of these changes are presented throughout this report.

Table 9: Program design changes for Drive EverGreen 2.0

Program Design Elements	DEG EV Incentive Program 1.0 Design	DEG EV Incentive Program 2.0 Design
Time frame	10/27/2016 – 1/5/2017	8/8/2017 – 11/30/2017
Delivery mechanism	-Voucher -Two certificates per person	-Voucher -One certificate per person, two per SCP account
Time of delivery	Point of sale	Point of sale
Incentive value levels	New EVs: -\$2,500 for non-CARE/FERA customers -\$5,000 for CARE/FERA customers Used EVs: -\$1,100 for used vehicles Initially reserved for low-income consumers (one voucher given)	New EVs: -\$2,000 for non-CARE/FERA customers -\$3,500 for CARE/FERA customers Used EVs: -\$1,000 for non-CARE/FERA customers -\$2,000 for CARE/FERA customers Used vehicles offered to all program participants at three dealer partners
Eligibility criteria	SCP customers in original SCP territory of Sonoma County	SCP customers in expanded SCP territory (Sonoma and Mendocino counties)
Vehicle eligibility	-Two OEMs -One dealership participant per OEM -One model available per OEM	-Eight OEMs -One dealership participant per OEM -One to five models available per OEM
Dealership involvement	-Submit vouchers and receive reimbursement -Participate in various marketing events throughout term of program	-Submit vouchers and receive reimbursement -Participate in various marketing events throughout term of program -Participate in Drive EverGreen Incentive program dealer trainings (up to three)
Complementary incentives and programs offered	-Manufacturer and dealer discounts -Copromotion of a free EV charger incentive program (incentive not offered concurrently with Drive EverGreen) -Copromotion of EverGreen service	-Manufacturer and dealer discounts -Copromotion of a free EV charger incentive program (incentive offered concurrently with Drive EverGreen) -Copromotion of EverGreen service
Education and outreach	-Email and social media marketing campaigns	-Enhanced marketing and outreach strategy - EV Buyer's Guide to be distributed to dealers to help customers understand benefits of driving an EV

What were the program's short-term impacts on EV adoption?

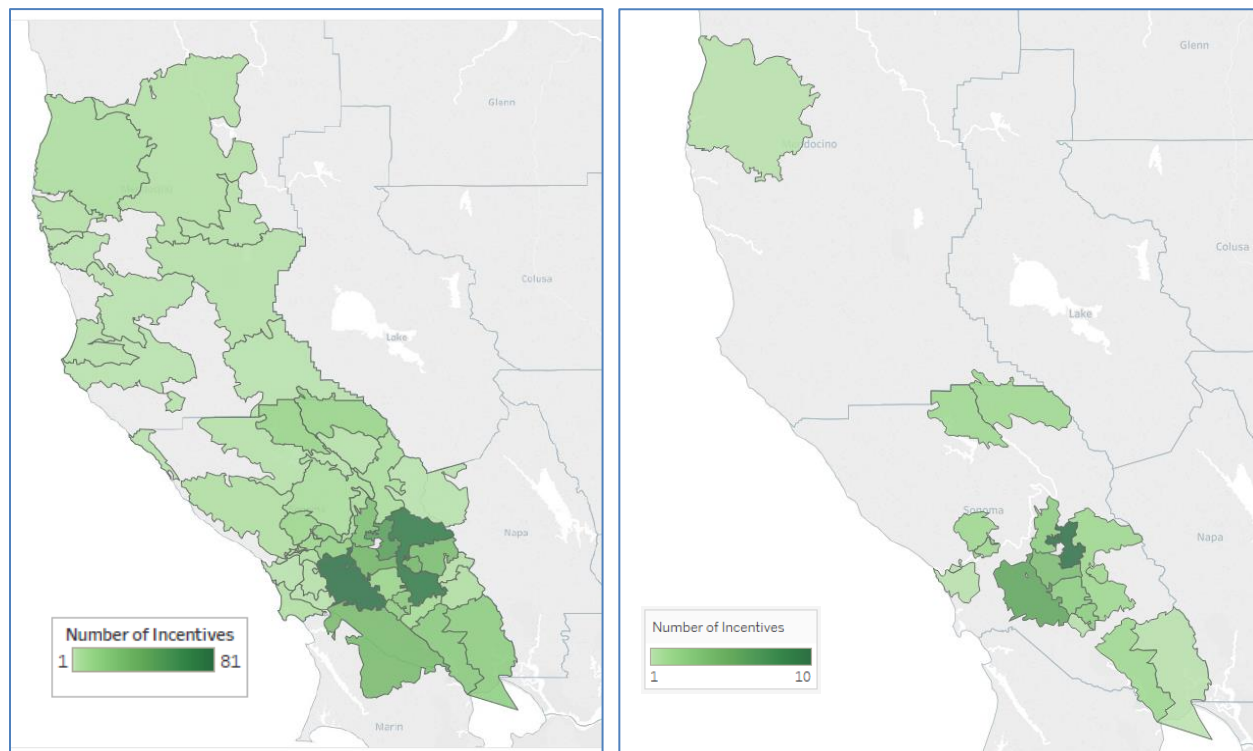
Program Participation Overall and by CARE/FERA Status

In total, 1,354 certificates were approved, and 567 (42%) certificates were redeemed for the purchase or lease of an eligible EV. There were 1,343 unique certificate recipients as 11 participants were approved for two certificates. Four of the 11 redeemed both certificates because of the loss of their initial EV to the Northern California wildfires. Two-thirds (67%) of incentivized vehicles were leased and 96% were new vehicles. In total, 20 used Nissan LEAFs and BMW i3s were incentivized through the program. Survey respondents (n=10) who purchased a used vehicle mentioned price as the biggest motivating factor for acquiring a used EV over a new one. Out of 94 non-redeemers, 77% of them reported purchasing an EV outside of the Drive EverGreen program.

Despite expansion of the program to include SCP customers in Mendocino County, Sonoma County residents received 95% of certificates issued, with 65% of certificates concentrated in the cities of Santa Rosa, Sebastopol and Petaluma. Certificates redeemed by CARE/FERA participants follow a similar trend, with 61% concentrated in the same cities. The following maps show the distribution of redeemed certificates overall and by CARE/FERA.

CARE/FERA participants made up 10% of the overall certificates issued for the program (138 out of 1,354). About one-third (31%) of CARE/FERA participants redeemed their certificates. Overall, 8% of incentivized vehicles went to CARE/FERA participants.

Figure 1. Distribution of redeemed certificates by ZIP code (overall, left, and CARE/FERA, right)



The most commonly incentivized EVs overall were the Chevrolet Bolt (186), Nissan LEAF (76) and the Volkswagen e-Golf (75), constituting 59% of all vehicles incentivized.

The most popular models acquired by CARE/FERA participants were the Kia Optima EV and Soul EV, Chevrolet Volt and Nissan LEAF. With the exception of the Chevrolet Volt, these vehicles had some of the highest incentive amounts and lowest average final purchase prices in the program (see average costs savings for detail).

Table 10: Number of EV models incentivized overall and by CARE/FERA status

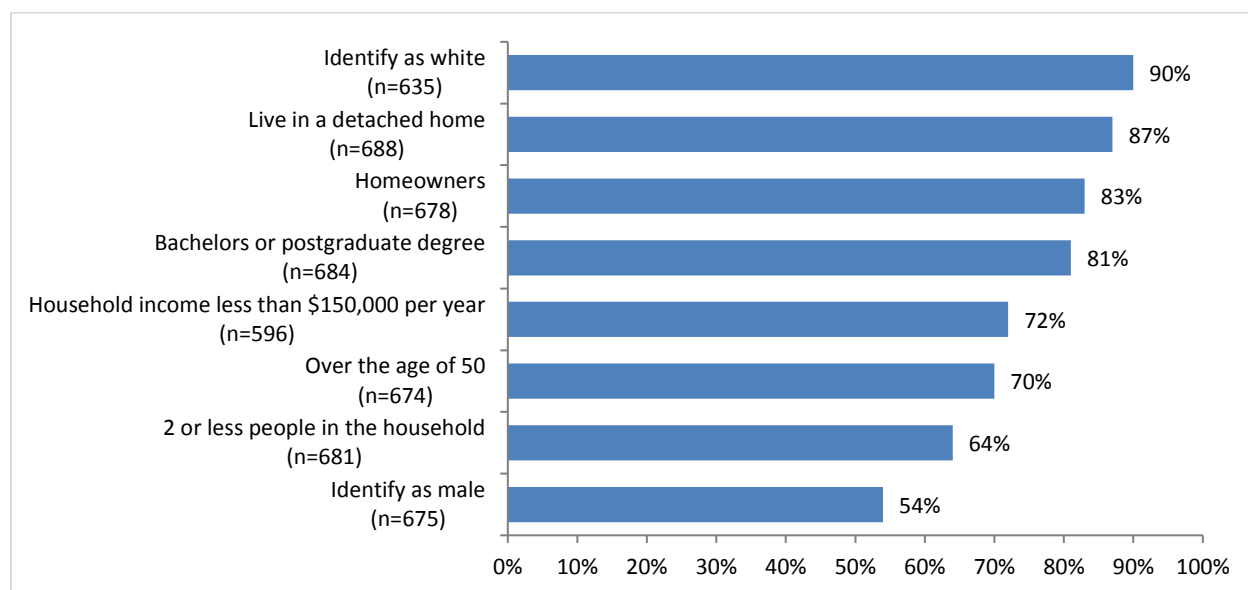
Eligible vehicles	Number of Vehicles Incentivized	Non-CARE/FERA Participants	Percent Non-CARE/FERA Participants	CARE/FERA Participants	Percent CARE/FERA Participants
Chevrolet Bolt	186	182	98%	4	2%
Nissan LEAF	76	70	92%	6	8%
Volkswagen e-Golf	75	74	99%	1	1%
Chevrolet Volt	66	58	88%	8	12%
Kia Optima EV	64	50	78%	14	22%
Kia Soul EV	47	39	83%	8	17%
BMW i3 REx	16	16	100%	0	0%
Ford Focus EV	16	15	94%	1	6%
BMW i3	12	12	100%	0	0%
Mercedes Benz B250e	9	8	89%	1	11%
Total	567	524	92%	43	8%

Program Participant Demographics

The majority of certificate recipients own their homes (83%) and live in detached houses (87%). The average age range of certificate recipients was 50-59 years old, with 70% over the age of 50. The average household size was 2.5 people and average household income was between \$100,000-\$150,000, with 72% of certificate recipients reporting household incomes of less than \$150,000 per year. Lastly, 90% of respondents identified as white, and 81% have earned a bachelor's degree or higher.

To determine how representative the Drive EverGreen 2.0 certificate recipients were of the overall Sonoma and Mendocino county population, CSE compared their income and racial/ethnic demographic data to census data collected from the American Community Survey. Findings showed that Drive EverGreen participants were more likely to identify as white (90%) when compared to the overall population (67%) and were less likely to identify as Latino/a or Hispanic (5%) than the overall population (27%).¹³ Furthermore, Drive EverGreen participants had a higher household income than the overall population. Approximately a quarter (28%) of respondents stated their household income was over \$150,000 per year, as compared to 14% of the overall population.¹⁴ Figure 2 shows the demographic breakdowns for all survey responses.

Figure 2. Majority demographic indicators of survey respondents



Statistically significant differences between certificate redeemers and non-redeemers were found in several demographic indicators. Redeemers were more likely to own homes than non-redeemers. In addition, redeemers were more likely to have a bachelor's degree or post-graduate degree. Lastly,

¹³ American Community Survey. Table B03002, Hispanic or Latino Origin by Race. <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>. Accessed 4/12/2018.

¹⁴ American Community Survey. Table B19001, Household Income in the Past 12 Months (In 2016 Inflation-Adjusted Dollars). <https://factfinder.census.gov/faces/nav/jsf/pages/index.xhtml>. Accessed 4/12/2018.

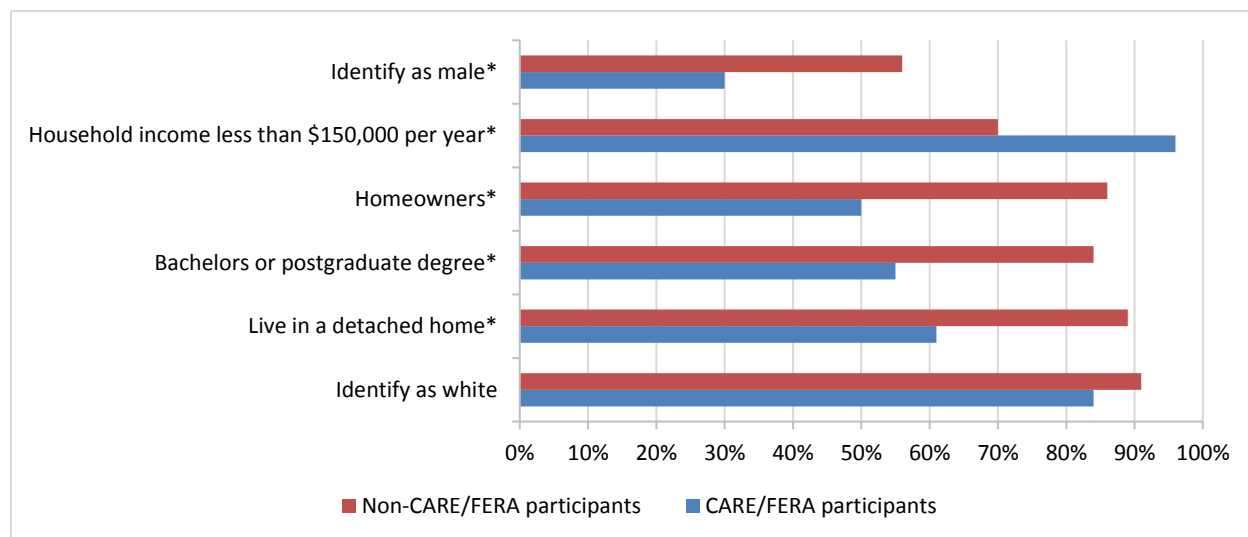
redeemers had a significantly higher average income than non-redeemers. No significant differences were found between these groups related to gender, household size or age.

Table 11: Statistically significant differences between certificate redeemers and non-redeemers

Demographic	Redeemers	Non-redeemers	P-value
Homeowners	87%	80%	0.006
Bachelor's degree or higher	86%	76%	0.004
Average annual household income	Approx. \$140,000	Approx. \$100,000	0.003

More significant differences exist between CARE/FERA and non-CARE/FERA participants. CARE/FERA participants were less likely to own their homes and more likely to live in attached homes or apartments. They were more likely than non-CARE/FERA participants to identify as female and less likely to identify as white. Finally, they had significantly lower levels of income and education. Figure 3 shows the significantly significant differences between CARE/FERA and non-CARE/FERA participants

Figure 3. Demographic and housing differences by CARE/FERA status

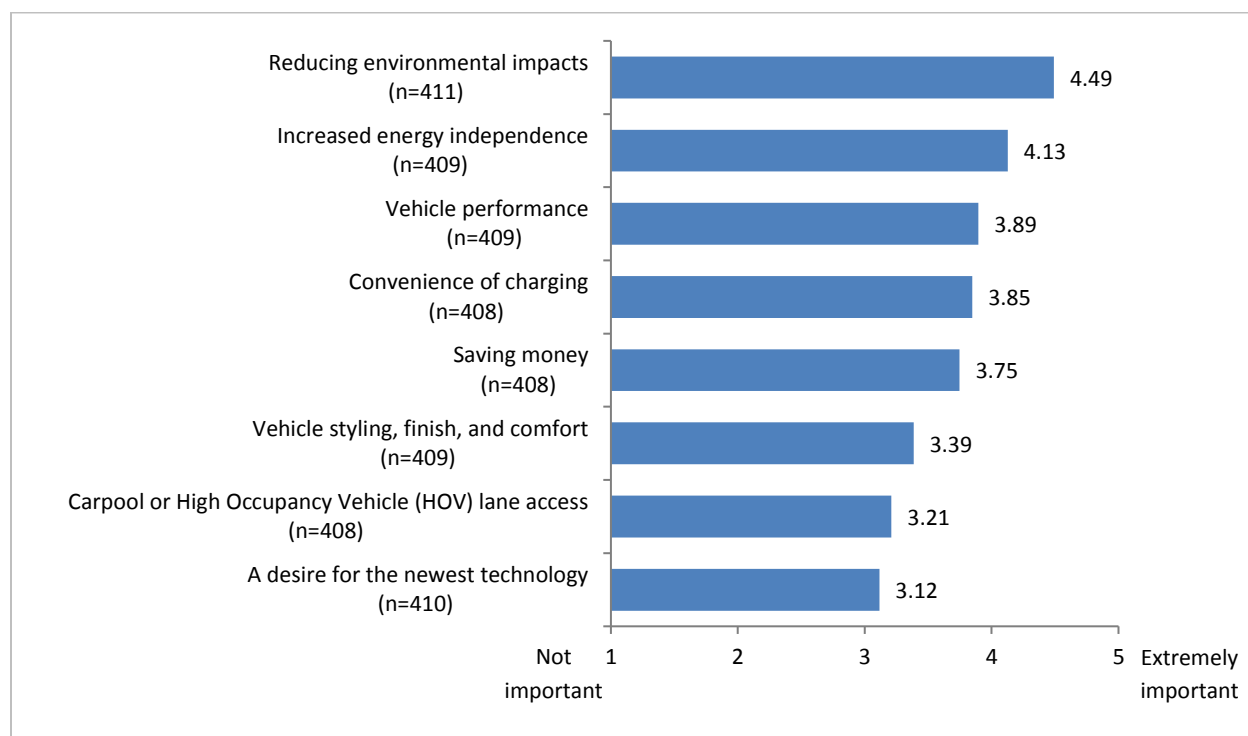


*symbol indicates statistically significant differences between groups.

EV Adoption Motivators

Certificate redeemers, and those non-redeemers who indicated that they acquired an EV outside of the Drive EverGreen program, were asked to rate the importance of several factors in their decision to adopt their EV. Reducing environmental impacts had the highest average importance of all motivations for adopting an EV, as shown in Figure 4. Increased energy independence also was a highly rated motivation.

Figure 4. Rated importance of motivations for adoption among respondents who adopted an EV

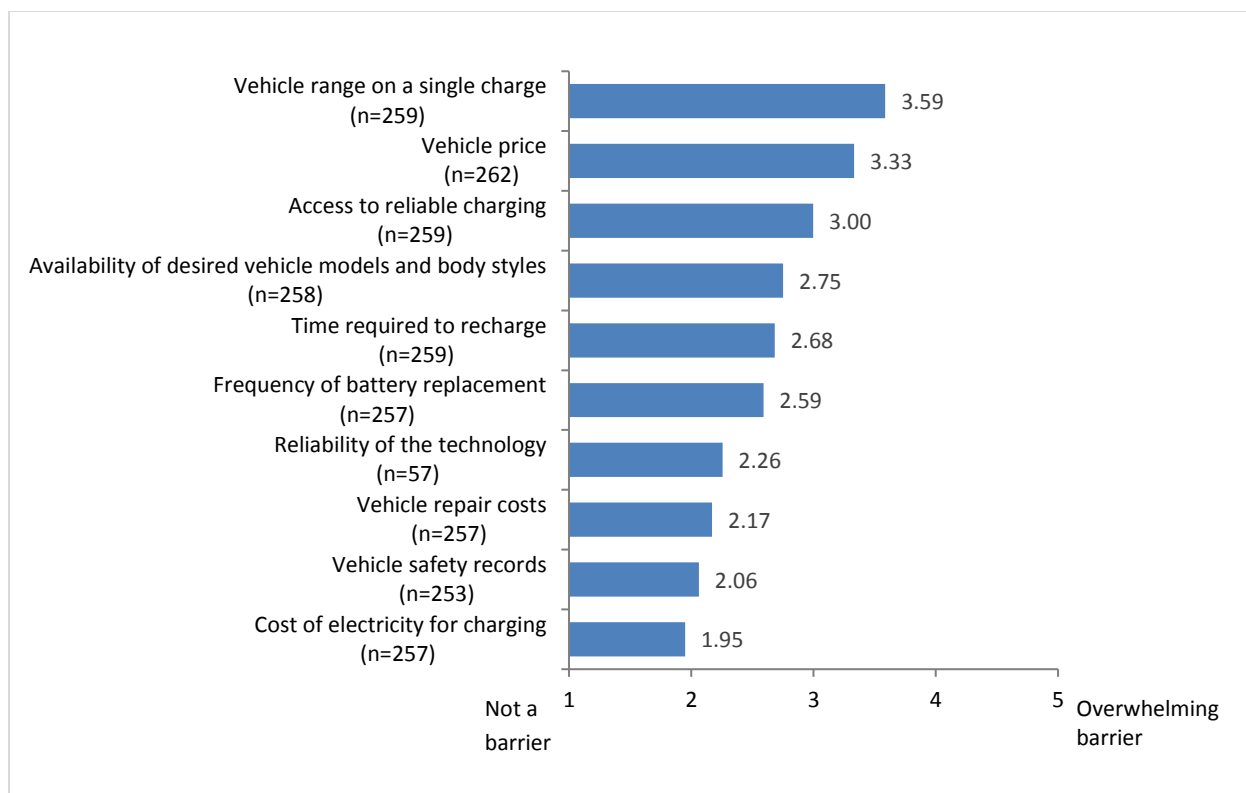


CARE/FERA participants were significantly more likely to rate saving money as a motivating factor when compared with non-CARE/FERA participants ($p=0.00$). They also reported more desire for the newest technology ($p=0.05$). Certificate redeemers valued saving money significantly higher than non-redeemers who acquired EVs outside of the Drive EverGreen program ($p=0.04$). These non-redeemers reported slightly higher income than the overall survey population; this could indicate that this subset of respondents may have more income flexibility, however, more analysis is needed to confirm.

Barriers to Adoption for Non-Redeemers

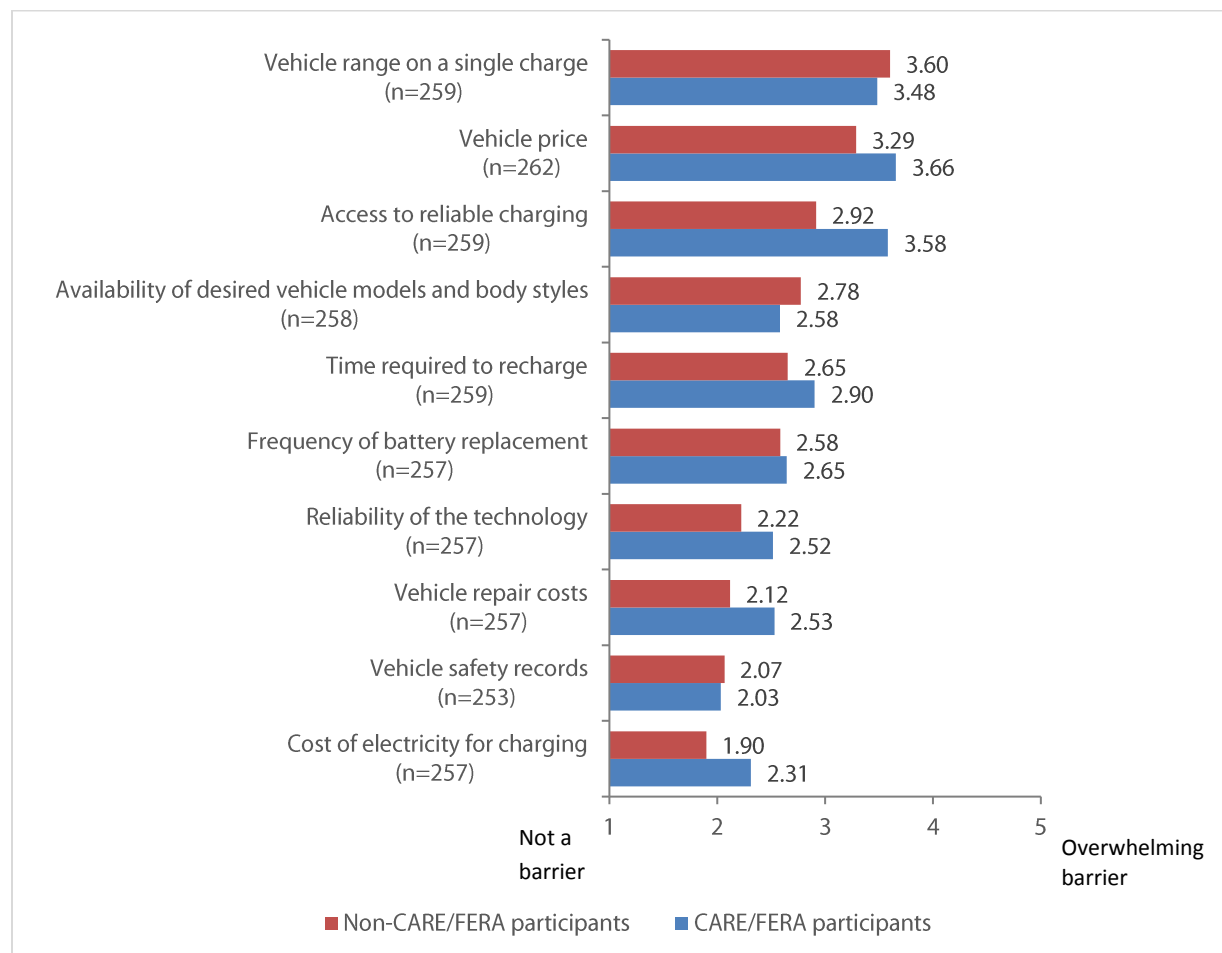
Non-redeemers who have not already purchased an EV, and have no plans to purchase one in the near future, were asked to rate the significance of common barriers to EV adoption. The most common barriers to adoption identified were range anxiety, cost and access to reliable charging.

Figure 5. Rated importance of selected barriers to adoption among non-redeemers



CARE/FERA participants again rated barriers related to cost, such as vehicle price ($p=0.05$) and electricity costs ($p=0.05$) significantly higher than non-CARE/FERA participants.

Figure 6. Differences in barriers to adoption by CARE/FERA status



Primary Reasons Why Certificate Non-Redeemers Did Not Acquire an EV

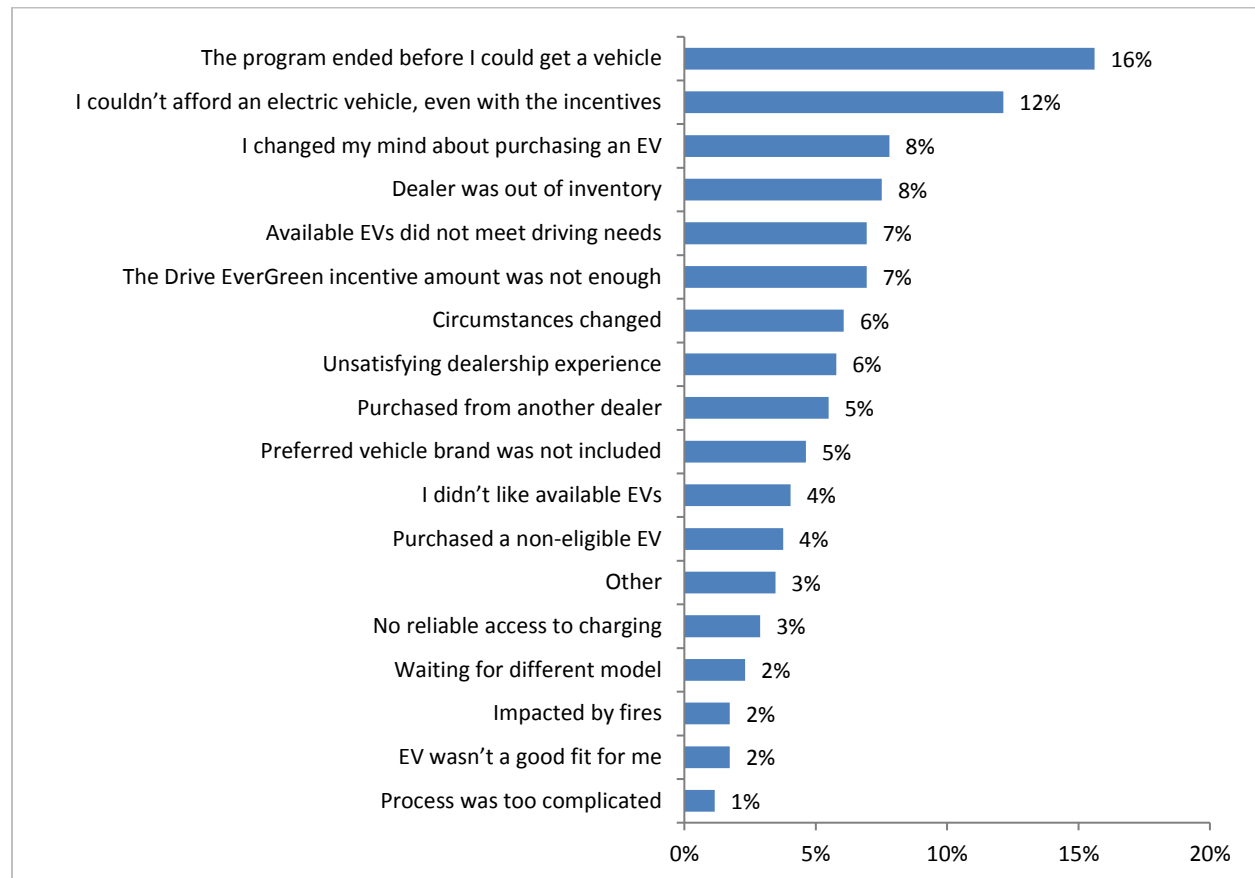
Survey respondents who did not redeem their certificates were asked to select the reasons they chose not to redeem. Respondents could choose multiple responses and provide open feedback on their reasons for not redeeming their certificates. Open-ended responses that fit within the themes specified in the multiple-choice options were re-coded and incorporated into the following data.

These are the most common reasons cited for not redeeming certificates.

- The program ending before they could get a vehicle (22%)
- The available vehicles did not meet their driving needs (18%)
- The vehicle wasn't affordable, even with the incentives (17%)
- The dealership ran out of inventory (13%)
- Unsatisfying dealership experience (12%)
- Preferred manufacturer not being included in the program (10%)

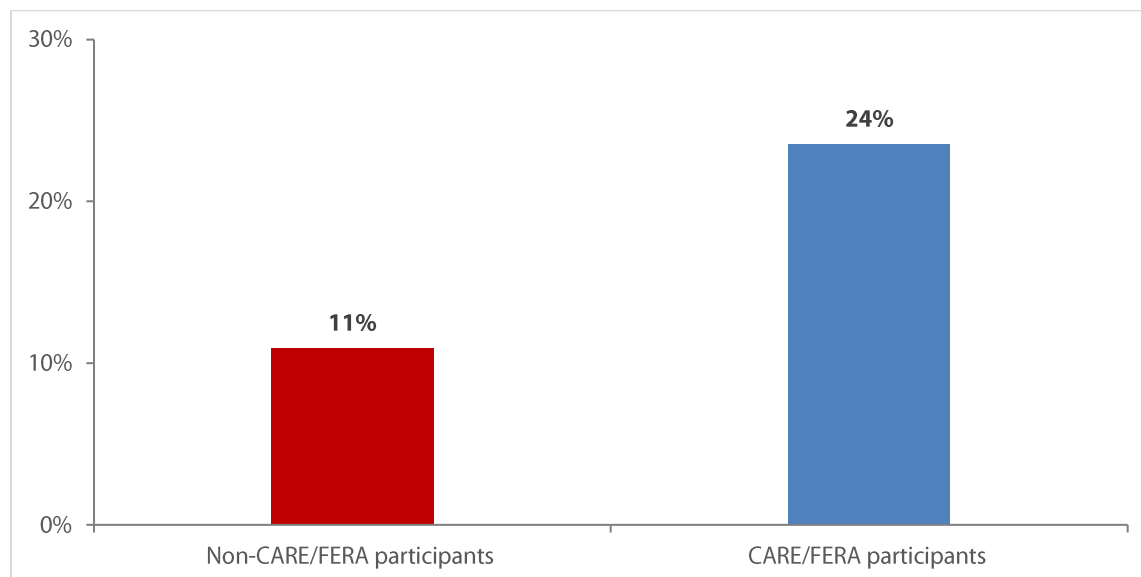
Based on their responses to this question, non-redeemers were then asked to select the PRIMARY reason they did not redeem their certificate. Figure 7 shows the primary reasons for non-redemption.

Figure 7. Primary reasons for not redeeming an approved certificate (n=346)



Non-redeemers cited the program ending before they could redeem their certificate as the main reason they did not redeem (16%). Inability to afford the vehicle after incentives was the second primary reason (13%). There was a significant difference between CARE/FERA and non-CARE/FERA respondents who stated that their main reason for not adopting was due to high costs even with incentives ($p=0.03$).

Figure 8. Percent of respondents who stated they could not afford an EV, even with the incentives by CARE/FERA status.



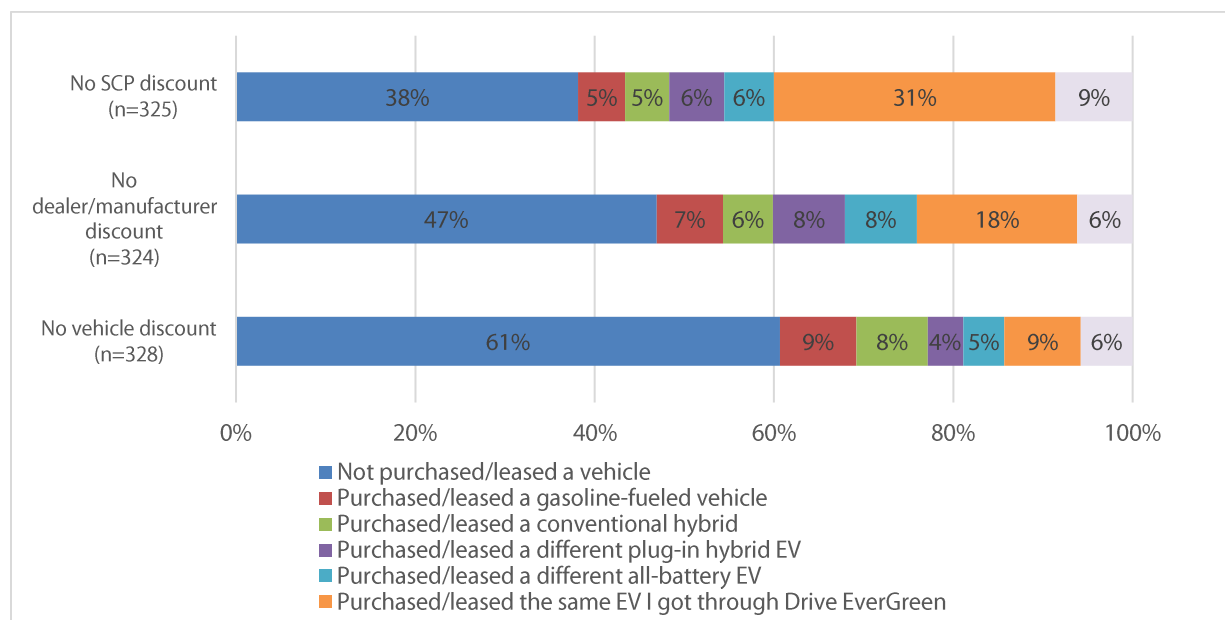
Importance of Incentives Offered in Decision to Acquire an EV

Redeemers rated each available financial incentive as very important factors in their decisions to acquire EVs. On a five-point scale, with one indicating not at all important and five indicating extremely important, the Drive EverGreen incentive was rated an average of 4.36, the state vehicle rebate 4.25, federal tax incentive 4.24 and Drive EverGreen dealer/manufacturer discounts 4.45.

In the context of incentive programs, “free-ridership” can be defined as program participation among consumers who would have adopted the technology even if the incentive did not exist. Free-ridership in these types of programs is often unavoidable and certain levels can be acceptable based on the goals of the program. To measure the impact of free-ridership, redeemers were asked a series of counterfactual questions to gauge their choices in the absence of the Drive EverGreen program. Respondents were shown their actual SCP and combined dealer/manufacturer discounts in the survey and asked to specify what they would have done if the program did not exist. A majority (77%) of redeemers reported they would have not adopted an EV if both the incentive and dealer/manufacturer discounts were not available, with 16% stating they would have acquired a more conventional vehicle type (hybrid or gas vehicle). Applied to the number of incentivized vehicles (567), this means that approximately 436 EVs were added to Sonoma and Mendocino county roads by the program. Less than one-fifth (17%) of redeemers stated they would have purchased an EV without the program and can be considered free-riders. Among CARE/FERA respondents, 87% reported that they would have not adopted EVs without the program, however, this difference was not found to be statistically significant.

Overall, 61% of redeemers stated that they would have not purchased a vehicle at all without the SCP and dealer/manufacturer discounts. Of this group, 72% replaced a conventional gasoline or hybrid vehicle.

Figure 9. What participants would have done without the incentives



These results indicate a slight increase in free-ridership between Drive Evergreen 1.0 (12%) and Drive EverGreen 2.0 (17%). Possible reasons may be the decrease in CARE/FERA participation and SCP incentive amounts as well as the significant growth in participation during Drive EverGreen 2.0. Despite this increase, the DEG 2.0 program still performs well when compared to other major EV incentive programs. For example, 46% of California’s Clean Vehicle Rebate Project participants surveyed between September 2012 and May 2015 indicated they would have not adopted their vehicle without the rebate.¹⁵ In the Massachusetts Offers Rebates for Electric Vehicles program’s first year, 50% of participants said they would have not adopted with the rebate.¹⁶ Lastly, in the Connecticut Hydrogen and Electric Automobile Purchase Rebate program – which is designed most similarly to DEG 2.0 in that it offers a point-of-sale discount – 68% said they would have not acquired an EV without the rebate.¹⁷

Spillover Effect and Rideshare Participation

Data were insufficient to meaningfully examine potential market spillover effects from the program. Isolating a program’s spillover effect from other factors in a dynamic market is challenging, but future research and programs can seek to examine spillover using clean vehicle sales data over time and follow-up surveys. Anecdotal evidence collected from survey responses and dealer interviews suggests that discounts were offered both to non-SCP customers at participating dealerships as well as by

¹⁵ Center for Sustainable Energy (2018). California Air Resources Board Clean Vehicle Rebate Project, EV Consumer Survey Dashboard. Retrieved 3/22/18 from <http://cleanvehiclerebate.org/survey-dashboard/ev>.

¹⁶ Center for Sustainable Energy (2015). MOR-EV: Year One Final Report. Retrieved from <https://mor-ev.org/sites/default/files/docs/MOR-EV Year One Report.pdf> on 4/12/2017.

¹⁷ Johnson, Clair, Williams, Brett, Anderson, John & Appenzeller, Nicole (2017), Evaluating the Connecticut Dealer Incentive for Electric Vehicle Sales, Center for Sustainable Energy. <https://energycenter.org/sites/default/files/docs/nav/research/CT-Dealer-IncentiveEvaluation-CSE-2017.pdf>. Accessed 3/22/2018.

competing dealerships that did not participate in the program. While these findings speak to market spillover, they are unable to be analyzed accurately for this report.

Survey respondents were asked if they drove for a rideshare service like Uber or Lyft. Only four total respondents indicated that they drove for a ride share.

Household Vehicle Composition and Future Vehicle Acquisitions

Survey respondents who redeemed incentives were asked whether their incentivized EV replaced, or will replace, another household vehicle. A majority (81%) of respondents were replacing a vehicle with their new EV, over half of which (51%) were conventional gasoline vehicles. An additional 20% were replacing diesel or conventional hybrid vehicles, while 28% were replacing EVs. Nearly all (95%) redeemers stated that they will use their newly incentivized EV as their primary vehicle.

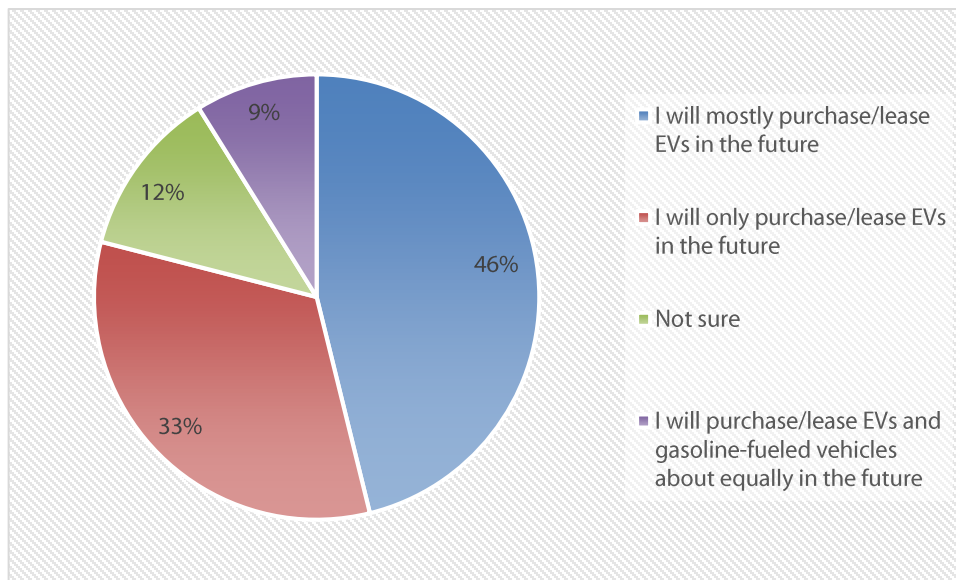
To gather more detail about EV adopters driving habits, we asked a series of questions related to household vehicle composition. On average, redeemers have nearly two (1.8) vehicles in their household in addition to their new EV. Approximately 1.5 of these vehicles are conventional gasoline vehicles. To better determine the uses of these gasoline vehicles, respondents were asked to indicate the tasks for which they use their conventional gasoline vehicles. The most common responses included the following.

- Taking long trips (61%)
- Running errands (43%)
- Commuting to work (32%)
- Other (24%)

Open-ended analysis of “Other” responses re-affirmed the use of these vehicles for long trips as well as hauling heavy loads for recreational or work purposes.

Redeemers also were asked to forecast their future vehicle acquisition plans. Results show that 79% of respondents plan to only or mostly purchase EVs in the future. These findings, as well as results indicating that 76% of redeemers also received a free EV charger, are positive indicators that certificate redeemers are likely to continue their EV purchasing behavior in the future.

Figure 10. Future vehicle purchasing plans among certificate redeemers (n=339)

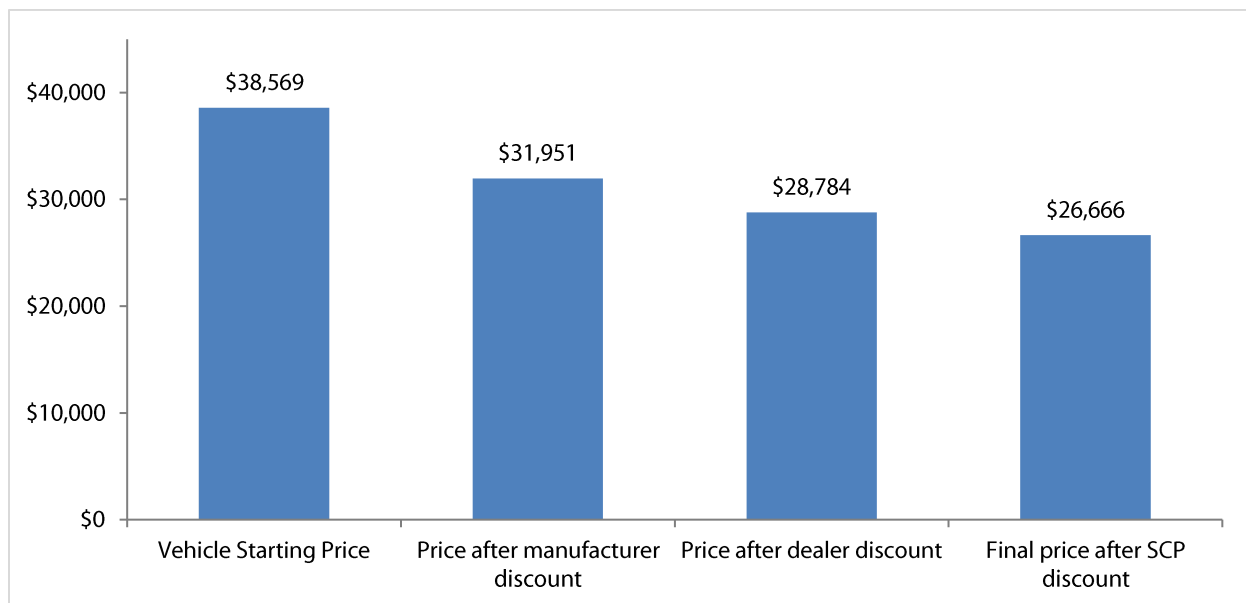


What average vehicle cost savings did program participants receive?

Upfront Vehicle Cost Savings

Analysis of program data and documentation revealed significant vehicle cost savings experienced by redeemers. On average, certificate redeemers who acquired a new EV received \$11,903 worth of discounts.

Figure 11. Average new vehicle cost savings for certificate redeemers (n=547)



Vehicle cost savings varied significantly based on new model acquired and whether redeemers purchased or leased their EV. The most highly discounted new EVs in the program were the Kia Soul EV, Nissan LEAF and Mercedes Benz B250e, however, total cost savings did not equate directly to number of EVs incentivized. Newer models available, like the Chevrolet Bolt significantly outperformed these heavily discounted models.

Figure 12. Average total discount on new EVs (n=547)

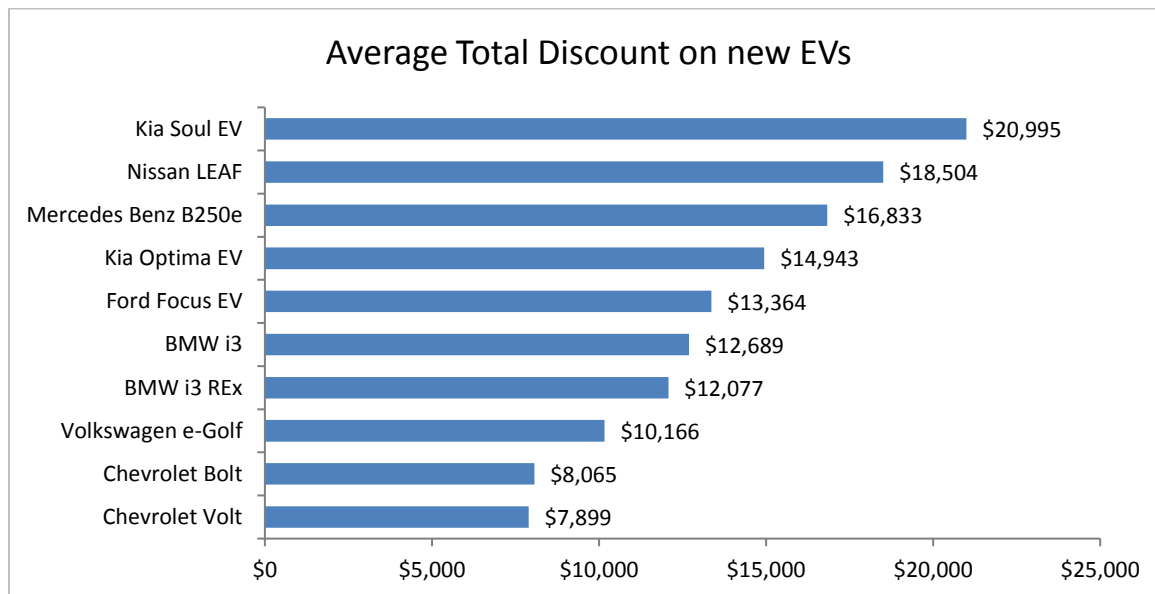


Table 12. Number of incentivized new EVs in relation to applied incentive discounts

Eligible EVs	EVs Incentivized	Avg Starting Price	Avg Dealer Discount	Avg Manufacturer Discount	Avg SCP Discount	Avg Final Sale Price
Chevrolet Bolt	186	\$41,455	\$3,018	\$3,016	\$2,032	\$33,389
Volkswagen e-Golf	75	\$33,263	\$3,706	\$4,440	\$2,020	\$23,097
Chevrolet Volt	66	\$37,579	\$3,008	\$2,709	\$2,182	\$29,680
Kia Optima EV	64	\$38,197	\$2,310	\$10,305	\$2,328	\$23,254
Nissan LEAF	62	\$35,746	\$5,142	\$11,217	\$2,145	\$17,242
Kia Soul EV	47	\$35,898	\$1,802	\$16,937	\$2,255	\$14,903
Ford Focus EV	16	\$31,045	\$1,432	\$9,838	\$2,094	\$17,681
BMW i3 REX	13	\$53,183	\$2,000	\$8,077	\$2,000	\$41,107
BMW i3	9	\$52,162	\$2,078	\$8,611	\$2,000	\$39,472
Mercedes Benz B250e	9	\$45,099	\$8,444	\$6,222	\$2,167	\$28,266
Total	547	\$38,569	\$3,168	\$6,617	\$2,118	\$26,666

Total vehicle savings were significantly different based on whether the redeemer purchased or leased the vehicle. Lessees received statistically significantly higher manufacturer discounts (over \$7,500 more on average), which led to significantly lower final prices. The increased manufacturer discounts for leased vehicles were most likely due to the ability of the lessor to claim the federal EV tax credit and pass those savings onto the customer.

Used EVs incentivized saw an average cost savings of \$1,568 per vehicle. None of the used vehicles that were incentivized went to CARE/FERA participants despite lower vehicle prices. According to dealership interviews conducted, used vehicles were typically only encouraged if buyers did not qualify for financing options being offered for a new EV and that they were subject to the availability of used models on the lot. Overall, used EVs made up nearly 20% of the total vehicles incentivized at

participating Nissan and BMW dealerships. More analysis and research is needed to determine the best methods for designing and maximizing a used EV incentive.

Table 13. Number of incentivized used EVs in relation to applied incentive discounts

Eligible Used EVs	EVs Incentivized	Avg Starting Price	Avg Manufacturer Discount	Avg SCP Discount	Avg Final Sale Price
Nissan LEAF	14	\$12,665	\$668	\$1,000	\$10,997
BMW i3	3	\$20,532	\$333	\$1,000	\$19,199
BMW i3 REx	3	\$20,105	\$333	\$1,000	\$18,772
Total	20	\$14,961	\$568	\$1,000	\$13,394

Self-reported Soft Cost Changes

While this evaluation stops short of a full cost-benefit analysis due to the amount of time and data access needed to conduct a thorough analysis, survey respondents were asked to self-report gasoline savings and changes to their electric bills as a result of charging their vehicles.

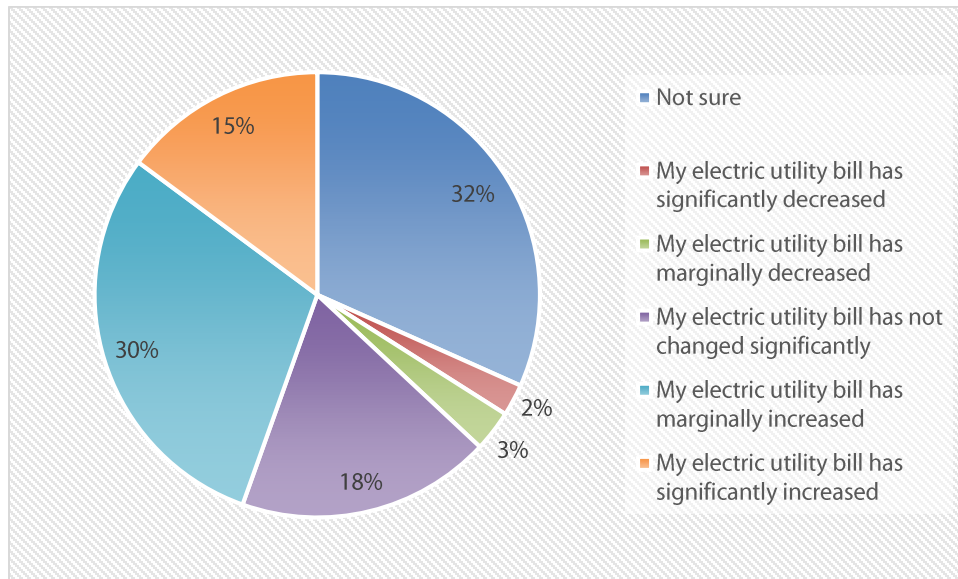
To examine these results, respondents were surveyed about their EV charging behaviors. A majority of redeemers (71%) stated that they had access to a charging station at home. In addition, redeemers were asked to rank charging methods by the frequency in which they use them. Results indicate that the most common method for charging their acquired EV is at home.

Table 14. Most frequently used charging methods by redeemers.

Charging Method	Rank
At home overnight	1
At home during the evening	2
At a public charging station	3
At home during the day	4
At work	5
Other	6

Redeemers also were asked to self-report if they have noticed any changes in their electric utility bill. In order to assure that respondents received at least one bill since acquiring their EV, results for this question were limited to those who had at least 35 days elapse between the purchase of their EV and the day they took the survey. Of this subpopulation, respondents had owned their EV for an average of 91 days. Overall, 45% stated they have seen a marginal or significant increase in their electric utility bill.

Figure 13. Self-reported change in electric utility bill (n=303)



More analysis is needed to determine actual impact of the change in electric costs for customers that take into account longer billing periods, time-of-use and peak season rates, weather factors and solar and home charger installations. In addition, these data do not take into account how redeemers perceive the additional cost and whether these costs are acceptable based on the environmental trade-offs. At least preliminarily, respondents are perceiving increases.

Finally, redeemers who replaced a gas-powered vehicle were asked to self-report their weekly gasoline savings that they are experiencing by not having to fuel their old vehicle. Respondents reported an average savings of \$35.93 per week (n=148).

What were the program's short-term impacts on reductions in GHG emissions and petroleum use?

Vehicle Miles Traveled (VMT) for EV Adopters

Survey respondents were asked, "On average, about how many miles do you think you will be driving your EV?" with boxes to fill for a typical workday and a typical non-workday. Assuming a 52-week year and five-day workweeks, BEV and PHEV adopters plan to drive their EVs averages of 11,648 miles and 11,890 miles, respectively.

GHG Emission Reductions as a Result of the Program

The total reduction in GHG emissions attributable to the program is estimated to be between 3,357 and 6,481 metric tons of CO₂ equivalent (CO₂e) over the program life of the adopted fleet (three years). This range estimate takes into consideration sensitivity tests on assumptions made to facilitate this estimate.

Table 15 summarizes the GHG reduction estimate. With our baseline assumptions applied, the AFLEET Tool calculated a reduction of 4,985 metric tons of CO₂e over the program life of the adopted fleet—equivalent to a per-vehicle reduction of approximately 9 metric tons of CO₂e.

Non-CARE/FERA participants reduced more GHGs in total and per total program expenditure, as they made up a larger proportion of the program. Due to the larger incentive amounts, emission reductions from CARE/FERA participants were more expensive than non-CARE/FERA participants on a per SCP incentive dollar basis, though CARE/FERA participants provided larger per-vehicle reductions. This difference may be due to CARE/FERA participants being more likely to replace older vehicles and/or not purchase or lease new vehicles had the incentive program not existed.

Table 15. Total GHG reductions over program life of the adopted fleet (three years) overall and by CARE/FERA status

Participant type	Total GHG Reductions	Cost of GHG Reductions per Total Program Expenditure	Cost of GHG Reductions per SCP Incentive Dollars	Reductions per Vehicle
Entire Program	4,985 metric tons of CO ₂ e	.31 metric tons per \$100	.42 metric tons per \$100	8.79 metric tons of CO ₂ e
CARE/FERA	383 metric tons of CO ₂ e	.02 metric tons of CO ₂ e per \$100	.25 metric tons of CO ₂ e per \$100	8.92 metric tons of CO ₂ e
Non-CARE/FERA	4,602 metric tons of CO ₂ e	.28 metric tons of CO ₂ e per \$100	.45 metric tons of CO ₂ e per \$100	8.78 metric tons of CO ₂ e

Petroleum Use Reductions as a Result of the Program

Table 16 summarizes estimated petroleum displacement attributable to the program. The AFLEET Tool estimated a displacement of 9,672 barrels of petroleum over the program life of the adopted fleet. This equates to approximately .82 barrels saved for every \$100 in incentive funding and 17 barrels per incentivized vehicle. Due to their larger proportion of program participation, non-CARE/FERA participants displaced more petroleum in total and per total program expenditure. CARE/FERA participants displaced less petroleum per SCP incentive dollar, and slightly more per vehicle.

Table 16. Total petroleum displacement over program life of the adopted fleet (three years) overall and by CARE/FERA status

Participant Type	Total Petroleum Displacement	Cost of Petroleum Displacement per Total Program Expenditure	Cost of Petroleum Displacement per SCP Incentive Dollars	Displacement per Vehicle
Entire Program	9,672 barrels	.60 barrels per \$100	.82 barrels per \$100	17.06 barrels
CARE/FERA	745 barrels	.05 barrels per \$100	.49 barrels per \$100	17.31 barrels
Non-CARE/FERA	8,927 barrels	.55 barrels per \$100	.87 barrels per \$100	17.04 barrels

GHG Reductions Originating in Sonoma and Mendocino Counties

Survey respondents who redeemed a certificate were asked to estimate the percentage of their total EV driving they will be doing within Sonoma or Mendocino counties. Respondents stated that an average of 84% of their driving will be within these counties. Although the impacts of GHG emissions are not locally contained, Sonoma and Mendocino will be able to show leadership in emission reductions that specifically impact local air quality.

Impact of Sensitivity Testing on GHG Reduction Estimates

Table 17 summarizes the results from sensitivity testing conducted on the assumptions made for the emission calculations. A 10% shift in the fuel economy of alternate fleet vehicles had the greatest impact on the emission reduction estimate. The high fuel economy scenario of the alternate fleet would decrease the GHG reduction estimate by 11%, while the low scenario would increase the estimate by 13%. A 10% shift in the assumed VMT had the second largest impact on this estimate, resulting in an increase of 8% and a decrease of 10% in the high and low scenarios. Combined, the assumptions have up to a 30.0%–32.3% impact on the overall GHG reduction estimate. Therefore, it is advised to represent the emission reductions as a range rather than an exact total.

Table 17. Summary of sensitivity testing

Assumption	Sensitivity Test Performed	Percentage Decrease in GHG Reduction Estimate	Percentage Increase in GHG Reduction Estimate
Fuel economies assigned for the alternate fleet accurately reflect the fuel economy that would have been achieved in the program's absence	±10% fuel economy per vehicle in the alternate fleet	-11%	+13%
Survey respondents provide accurate estimates of the number of miles they will be driving their incentivized EVs AND their mileage would be the same had the program not existed	±10% annual VMT per vehicle in the adopted and alternate fleet	-10%	+8%
Survey responses accurately reflect all certificate redeemers	±5% total emissions for alternate fleet	-6%	+6%
Unspecified portion (10%) of the SCP CleanStart Electricity Portfolio is properly represented by the modified California mix from the Draft CA-GREET 3.0 Supplemental Document (23.2% renewable, 62.8% natural gas, 0.4% coal, 9.0% nuclear power, 3.4% biomass, 1.1% residual oil)	Adjust unspecified portion of electricity portfolio to 100% renewable energy and to 100% coal	-4%	+2%
PHEVs are operated in 40% electric mode	±10pp electric mode per vehicle	-1%	+1%
BMW i3 RExs are operated in 100% electric mode	-10pp electric mode per vehicle	-0.3%	N/A
Sum of variability achieved by sensitivity tests		-32.3%	+30.0%
GHG reduction estimates with sensitivity testing adjustments		3,375 metric tons of CO₂e	6,481 metric tons of CO₂e

What impact did changes in program structure have on EV adoption?

Changes to Rebates and Consumer Behavior

The major changes to Drive EverGreen 2.0 were in the number of vehicles available, changes to rebate amount and the addition of used vehicles to the program. Since used EVs were not widely available in Drive EverGreen 1.0, the impact of this change was not measured in this analysis. To determine the impact of the changes in model availability and rebate amount, we compared results from Drive EverGreen 1.0 with Drive EverGreen 2.0.

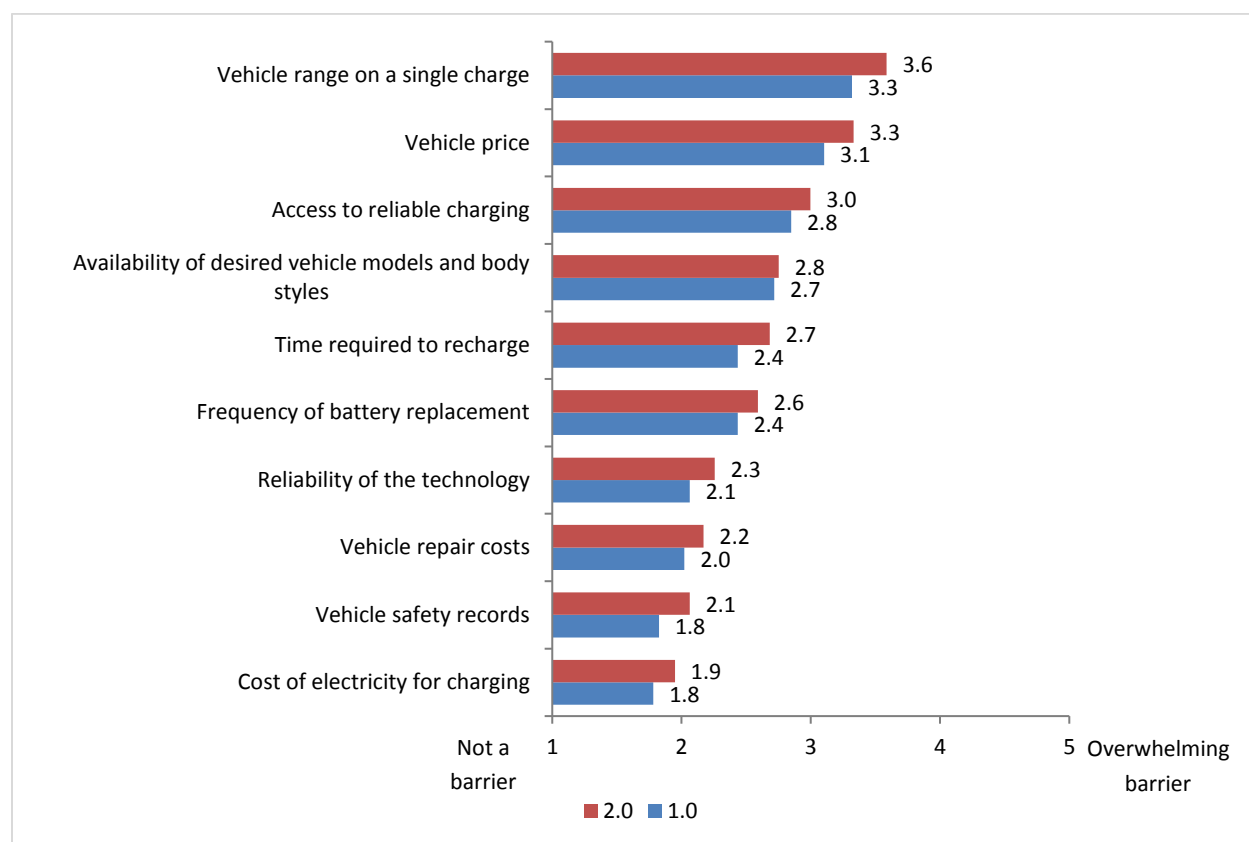
Results showed that a higher percent of recipients in Drive EverGreen 2.0 redeemed their certificates for an eligible EV. Considering one of the biggest reasons for non-adoption during the pilot was the lack of available models, this increase may be contributed partially to the increase in model availability. Results indicate a 18% decrease in respondents who said they did not like the available models in the program. While the increase in model availability seemed to correlate to increased redemption, the lowering of the rebate amount seems to indicate a negative effect on CARE/FERA participation. CARE/FERA participation decreased by about 50% from the pilot program, and CARE/FERA participants were significantly more likely to view cost as an impediment, as outlined at various points in this report.

Table 18: Differences in key metrics from Drive EverGreen 1.0 – 2.0

Metric	Drive EverGreen 1.0	Drive EverGreen 2.0
Redemption rate	37%	42%
Model availability concerns by non-redeemers	27%	9%
CARE/FERA participants	19%	10%
Income less than \$150,000	70%	72%

Vehicle range, price and charging infrastructure remained the most common barriers to adoption between program cycles and were identified as slightly more of a significant barrier in Drive EverGreen 2.0.

Figure 14. Analysis of barriers to adoption from Drive EverGreen 1.0 – 2.0



Impact of Educational Materials on Consumer Awareness and Knowledge of EVs

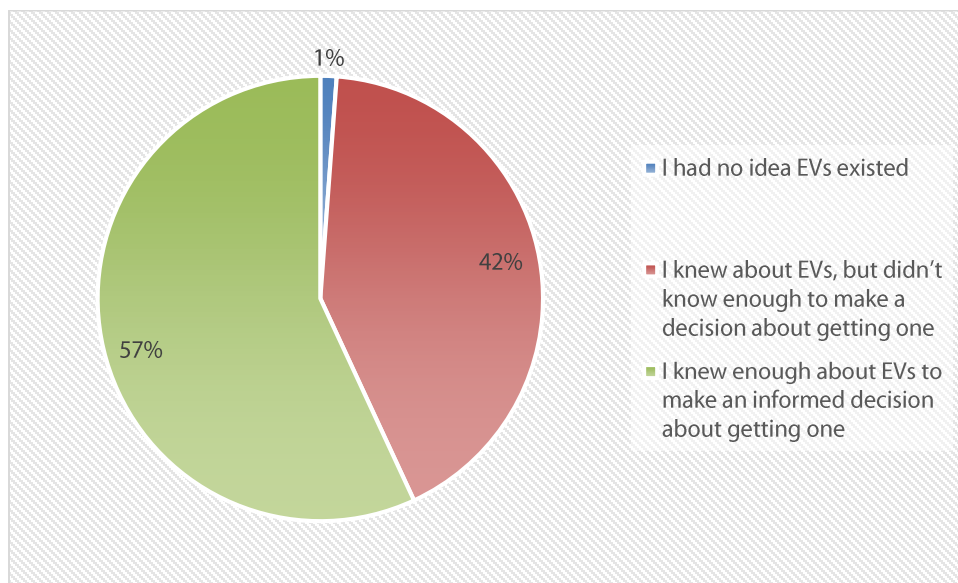
In order to assist program participants in learning about EVs, SCP created the Electric Vehicle Buyer’s Guide and distributed it to prospective program participants through their website, tabling events and participating dealerships. 80% of printed copies were provided to the participating dealerships. Overall, only 19% of program participants stated that they received a copy of the guide. Of the participants who received the guide, 66% stated that the guide helped them understand the benefits of EV ownership. While the EV Buyer’s Guide was not widely distributed among program participants, a majority of participants who received it found it valuable.

What were the program's short-term impacts on EV awareness and the Drive EverGreen and Sonoma Clean Power brand?

Impact of Program on EV Awareness

All survey respondents were asked to describe their awareness of EVs before participating in Drive EverGreen 2.0. Results show that certificate recipients were fairly familiar with EVs prior to the program. Some 57% of respondents stated that they knew enough about EVs to make an informed decision about getting one before the Drive Evergreen program. On the other hand, 42% of certificate recipients stated they knew about EVs, but not enough to make an informed decision. Among redeemers, 44% stated they did not know enough about EVs to make a decision, indicating that participation in the program may have motivated redeemers to build their awareness of the technology as they made a decision to acquire an EV. CARE/FERA program participants were significantly less likely ($p=0.001$) to report that they knew enough to make a purchasing decision on an EV.

Figure 15. Certificate recipient knowledge of EVs before Drive EverGreen (n=680)



Impact of Drive EverGreen on the SCP Brand

A self-reported 16% of certificate recipients had not heard of SCP before participating in the Drive EverGreen program. A slightly higher proportion of CARE/FERA respondents (23%) indicated that they had not heard of SCP, although this difference was not found to be statistically significant.

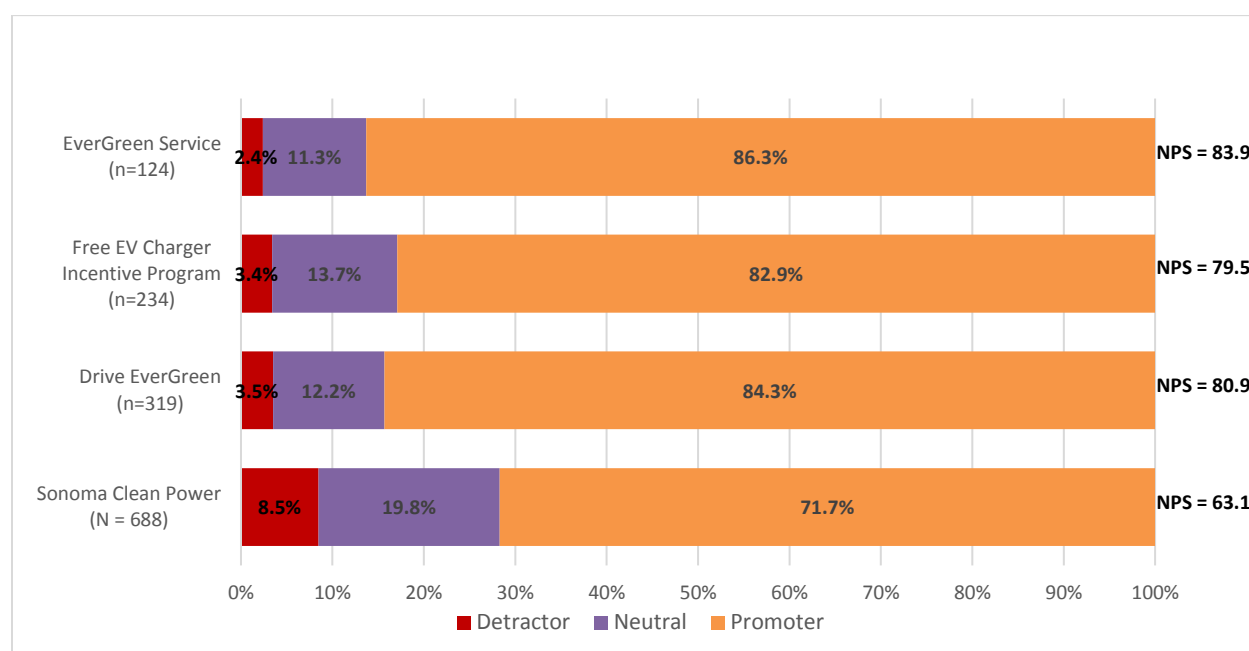
To measure impacts of this program on the SCP and Drive EverGreen brand, the evaluation team asked a series of net promoter score (NPS) questions to survey respondents. The NPS system was created by Fred Reichheld and a team at Bain and Company¹⁸ and has become a common way to gauge customer satisfaction and loyalty to a particular brand. The NPS system works by asking respondents the

¹⁸ <http://www.netpromotersystem.com/about/why-net-promoter.aspx>. Accessed 3/23/2018.

likelihood that they would recommend a particular program to a friend. The question is measured on a 10-point scale and responses are organized into promoters (9 or above), neutral (7-8) or detractors (6 or below). The net promoter score is then calculated by subtracting the percent of detractors from the percent of promoters. Net promoter scores are often used by companies for benchmarking and there is no official consensus as to what makes up a good NPS, however, according to the Temkin Group consumer benchmark survey, the average NPS scores for utility companies was 27.¹⁹

Survey respondents were asked NPS questions for SCP, the Drive EverGreen program, the free EV charger incentive program, and the EverGreen service plan. All respondents rated SCP, redeemers rated Drive EverGreen, and only those who indicated that they had applied or enrolled in EverGreen or the free EV charger incentive program were asked to rate them. NPS scores reveal high levels of satisfaction with all aspects of this program. In particular, Drive EverGreen received a NPS of 80.9.

Figure 16. Net promoter analysis



¹⁹ <https://temkingroup.com/product/net-promoter-score-benchmark-study-2016/>. Accessed 3/23/2018.

What types of outreach and awareness activities were effective in raising awareness of, and participation in, the program?

Marketing and Outreach Activity

SCP significantly expanded its marketing and outreach activities for Drive EverGreen 2.0 based on the findings from the pilot evaluation. Marketing and outreach strategies included the following.

- Targeted email campaigns to SCP and CSE contact lists
- Direct mailers
- Radio and TV advertisements
- Print and online advertising
- Targeted billboards and outdoor advertisements
- Facebook advertising
- Community events

TV and radio ads, billboards and online advertising ran throughout the course of the program. Facebook ads also ran continuously and were targeted specifically to county users based on interests (e.g., EVs, the Press Democrat), political leanings (e.g., liberal, Bernie Sanders), education level (e.g., college or post-graduate degree) and age (e.g., 18-65, generation X, millennials) Email and direct mail campaigns, print advertising and direct mail occurred at set intervals during the project. Table 19 shows the extent of marketing activities.

Table 19. Summary of marketing and outreach activities

Activity	Number of campaigns	Estimated people reached	Link Clicks
Email blasts	5	4,336	217
Direct mail campaign	1	193,574	
Direct mail campaign to CARE/FERA customers	1	52,591	
Radio ads (English and Spanish)	4 commercials	Unknown	
TV ads (English and Spanish)	4 commercials	Unknown	
Print ads	36	Unknown	
Online digital ads	Ongoing	Unknown	
Billboards and outdoor advertisements	8	Unknown	
Facebook advertising	33	365,829	5,289
Community Events	8-9	Approx. 1,300	

Marketing and Outreach Effect on Certificate Applications

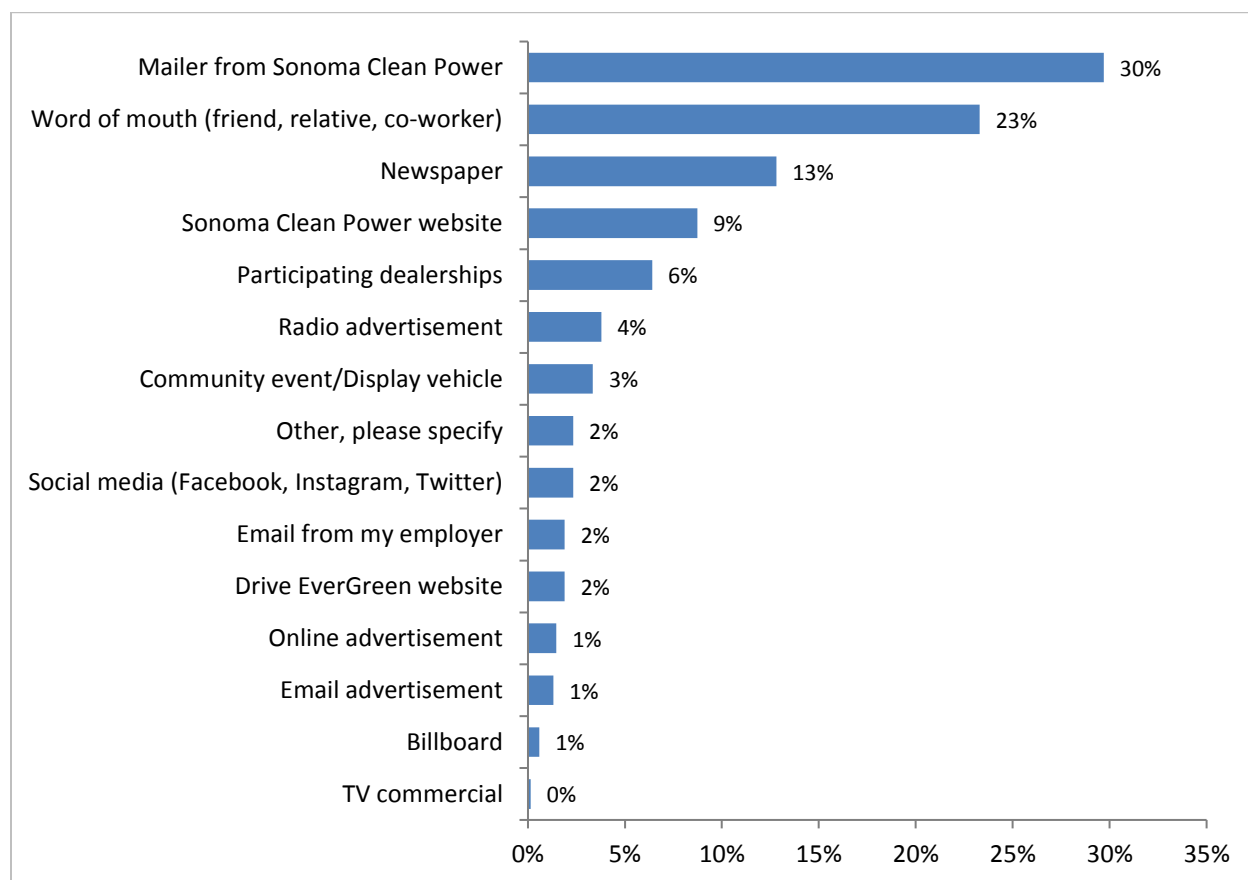
Survey respondents were asked how they heard about the Drive EverGreen program. Respondents were able to select multiple responses in order to capture all the ways in which marketing reached program participants. Survey piping logic was then used to determine how recipients *first* learned about the program.

A majority of survey respondents (n=690) were exposed to the program via more traditional methods such as the following.

- Direct mailers (47%)
- Sonoma Clean Power/Drive EverGreen website (45%)
- Word of mouth (34%)
- Participating dealerships (15%)
- Newspaper advertising (14%)
- Community events/display vehicles (10%)

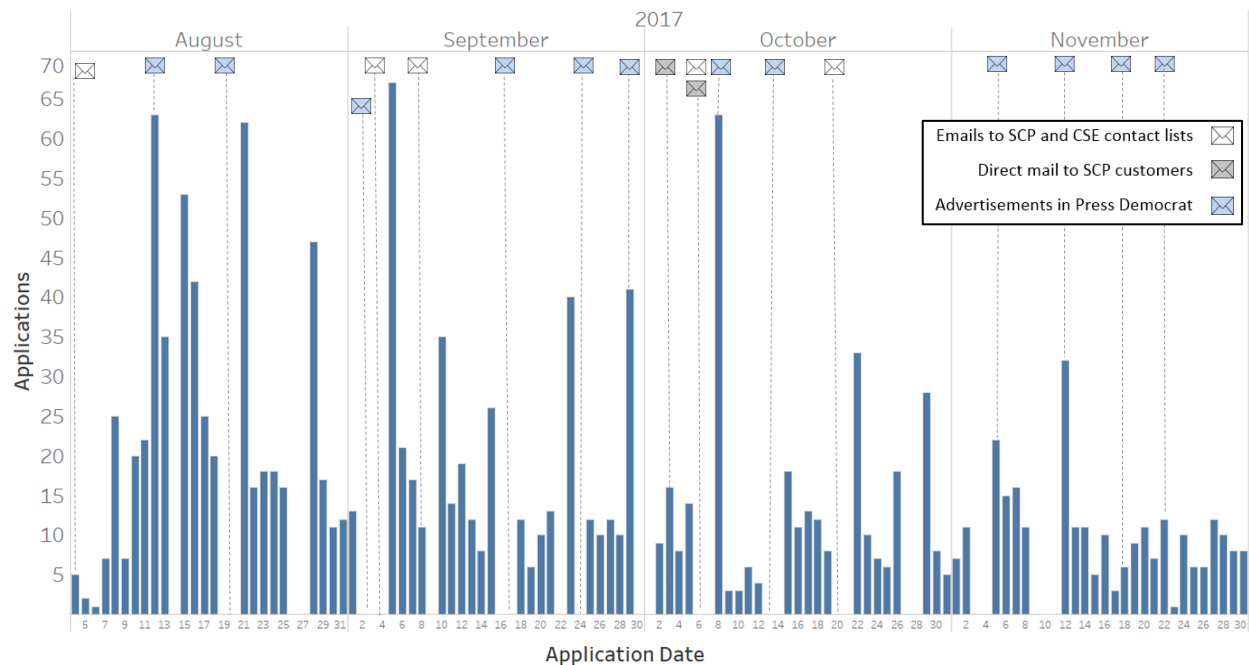
The ways in which survey respondents were *first* introduced to the program are very similar. The following chart shows how survey respondents first heard of the program.

Figure 17: How certificate recipients first learned of the Drive EverGreen 2.0 program (n=687)



Survey responses, coupled with relatively low click-through rates of email and social media campaigns, indicate that targeted mail and print campaigns were more effective at building awareness of the program. Open-ended responses indicated that the Press Democrat was the newspaper that provided the most leads to the program. Figure 18 shows the impact of Press Democrat, email and direct mail advertising on program applications. Findings confirm that Press Democrat and direct mailers positively correlated to program applications.

Figure 18. Certificate applications and marketing efforts



How many program participants took advantage of the free EV charger incentive program and EverGreen service plan? How many repeat customers were there from Drive EverGreen 1.0?

Participation in the Free EV Charger Incentive Program and EverGreen Service Plan

In addition to the Drive EverGreen vehicle incentive, SCP copromoted a separate incentive for a free home EV charger as well as their EverGreen service rate, which guarantees customers 100% local and renewable energy provision to their home. If redeemers took advantage of all three programs, they could substantially lower their GHG emissions related to the use of their new EV depending on if they acquired a PHEV or BEV.

Copromotion of the free EV charger incentive program was a success, with 85% of redeemers indicating they learned about the charger incentive through the Drive EverGreen program. In addition, reviews of enrollment data indicate that 76% of certificate redeemers also took advantage of the charger incentive. Most redeemers (77%) were already aware of the EverGreen service rate, with 37% indicating they were already on the EverGreen plan. Overall, 22 redeemers (4%) enrolled in EverGreen between 7/3/2017 and 2/5/2018. These data indicate that the SCP customers have more knowledge about EverGreen and may have researched its benefit prior to the Drive EverGreen program. In total, 17 redeemers (3%) took advantage of all three programs during the Drive EverGreen program period. Lastly, 12 redeemers had previously left SCP service and re-enrolled in SCP in order to participate in the program.

Repeat Participation from Drive EverGreen 1.0

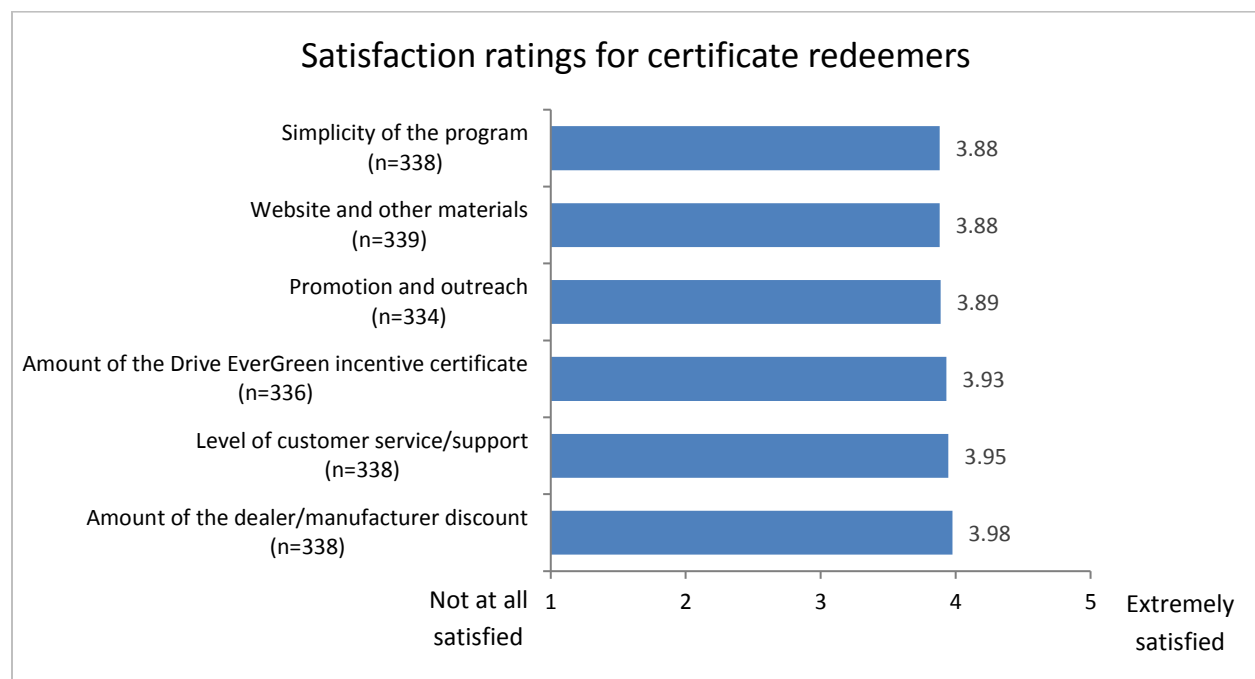
Analysis of application data from Drive EverGreen 1.0 revealed a very small portion of repeat customers from Drive EverGreen 1.0. In total, 57 program participants received an incentive certificate from Drive EverGreen 1.0. A large majority of them (46) did not redeem their certificate during the pilot program. Nearly half (46%) ended up acquiring an EV during Drive EverGreen 2.0. Lastly, five participants redeemed their certificates in both iterations of the program. Overall, 4% of unique certificate recipients for Drive EverGreen were repeat participants, and less than 1% redeemed certificates in both programs.

What lessons were learned from the 2.0 administration of Drive EverGreen, and how can the program be improved in the future?

Participant Satisfaction and Program Recommendations

Certificate redeemers were asked to rate their level of satisfaction with various aspects of program design on a five-point scale (not at all satisfied to extremely satisfied). On average, respondents were very satisfied with all aspects of the program, but marginally less so with the website and simplicity of the program.

Figure 19. Participant satisfaction with various features of the Drive EverGreen program



In an open-ended question, survey respondents provided feedback on Drive EverGreen 2.0 and made suggestions for improving the program. Responses were coded and categorized into themes. Common themes were then identified for both certificate redeemers and non-redeemers. Certificate redeemers (n=55) cited increased community engagement through advertising and events (20%) and more vehicle options (13%) as the most common areas for program improvement. Other common themes identified by certificate redeemers were

- Increased transparency in vehicle costs (13%)
- Easier access to incentive options and information (13%)
- Wider dealership selection (11%)

A higher percentage of certificate non-redeemers (n=112) identified more vehicle options (26%) and wider dealership selection (24%) as their most common areas for program improvement. Other common themes identified by certificate non-redeemers were

- Increased program duration (14%)
- More or larger incentives (10%)
- Different vehicle financing options (e.g., more leasing and buying options) (10%)

While not specifically a program recommendation, a large portion of the respondents used this question to share their satisfaction with the program (48) and suggest that SCP invest in public charging infrastructure projects (58).

Participating Dealership Impact

To determine the impacts of the Drive EverGreen program on participating dealerships, CSE conducted interviews with representatives from five of the seven dealership participants. Interviewees were often sales managers and were not involved in the day-to-day selling of the vehicles. Interview questions were meant to gather perspectives on the impact of the program on the dealership, effectiveness of training and support, quality of communication, effectiveness of marketing activities and recommendations for improving the dealership and customer experience.

All dealership staff interviewed reported satisfaction with the increase in sales they attained through the program and stated that they would be very likely to participate in future iterations of the program. The most common logistical hurdles dealers faced were related to inventory issues and model availability. Interviewees found marketing strategies effective and supplemented those activities with their own email campaigns and collateral. A few dealers indicated that customers trusted SCP's marketing and outreach more and that it was better received than efforts at the dealership. Most interviewees did not participate in the trainings personally but reported that their staff were largely satisfied with the training and support provided and felt SCP was responsive to their needs. Some interviewees indicated that they were still unprepared and that more resources to help navigate the reimbursement process would have been helpful. Key recommendations suggested by dealer interviewees for program improvement included the following.

- Provide more information to customers on the Drive EverGreen incentive and the free EV charger incentive program (e.g., electrician list for charger installations).
- Allow customers to claim/dealers to be reimbursed for an incentive without a certificate.
- Streamline the rebate process to make it easier to access.
- Assist dealers in the incentive planning process (e.g., inventory readiness).

Finally, all five dealerships stated that they offered manufacturer and dealer discounts to non-SCP customers who were shopping for EVs. They explained that this was offered as part of vehicle negotiations or to stay competitive with other dealers (not specific to whether these dealers were part of the program or not). They also stated that they had little control over the manufacturer discount and to whom it was offered.

Program Staff Input

CSE program staff who administered the Drive EverGreen incentives provided comments and feedback on program design and operations. In general, staff indicated that while efforts were made this year to streamline program operations, the Excel-based process of incentive administration and the increase in the volume of applications led to increased data entry and verification times and lacked the sophisticated safeguards and tracking to prevent errors used in other, more fully developed EV rebate programs. Improvements to the SCP customer look-up tool that was used to verify SCP account status were successful in mitigating issues that existed during Drive EverGreen 1.0 with verifying customer information. Documentation of incentive itemization improved in Drive EverGreen 2.0, but was not always submitted on the proper paperwork, causing issues with incentive processing. This was compounded by dealerships changing their incentive amounts throughout the program duration, causing confusion to consumers who were approved when incentives were different from when they received their certificate. Despite a disclaimer that allowed for discount changes, it still led to customer complaints. Overall, the CSE team had a positive experience working with and communicating needs to dealers.

VI. Recommendations

The following section introduces recommendations for future iterations of Drive EverGreen based on the evaluation results. Recommendations are grouped by program element.

Program Design

- 1. Engage more dealers in a wider geographic region.** As noted, 95% of Drive EverGreen certificates were issued to residents of Sonoma County. Despite SCPs efforts to engage all EV dealers in their service territory through a competitive RFP process, the Drive EverGreen program enrolled approximately 25% of EV dealerships, all located in a relatively close proximity to each other and none located in Mendocino County. There also is evidence to suggest that non-participating dealers were offering similar discounts to compete with Drive EverGreen incentives. Considering these factors, increasing the number and geographic diversity of participating dealers (e.g., one dealer per OEM, per county) may facilitate program participation among a larger and more diverse population; any potential spillover effects may also be amplified.
- 2. Continue to expand model availability and used vehicle options.** Increases in model availability were found to be key to the success of Drive EverGreen 2.0. However, reasons often cited for non-redemption were related to available vehicle body styles or brands not being eligible for the program. While the program is bound by the EV body styles available on the market, new vehicle body styles are becoming available each year. Continuing to expand the list of eligible vehicle models will further expand the program's appeal to a broader audience. While relatively low in overall number of vehicles incentivized, nearly 20% of vehicles incentivized at Nissan and BMW dealerships were used EVs. Encouraging other participating dealers to offer used EV incentives will further increase EV options available to consumers and may facilitate more used EV sales.
- 3. Increase rebate amounts and outreach activities to spur CARE/FERA participation.** Drive EverGreen 2.0 saw significantly less participation from CARE/FERA participants than Drive EverGreen 1.0, and CARE/FERA participants surveyed were significantly more likely to identify vehicle costs as motivators and barriers to adoption. These findings suggest that the \$1,500 decrease in incentive amount from Drive EverGreen 1.0 negatively impacted CARE/FERA customer participation in the program. In addition, significantly less CARE/FERA participants indicated that they knew enough about EVs to make an informed decision on purchasing one. Increasing the rebate amount for CARE/FERA participants and partnering with local community-based organizations to conduct outreach can help ensure underserved communities have equitable access to EVs.
- 4. Increase access to educational materials.** Some 81% of survey respondents indicated that they did not receive a copy of the EV Buyer's Guide. SCP should consider ways to increase the guide's availability for program participants, for example, by placing information from the guide on separate webpages on the SCP website in addition to making it available as a PDF and printout.

5. **Add a concurrent financial incentive for enrolling in the EverGreen rate plan.** More than one-third (37%) of certificate redeemers indicated that they were already on the EverGreen service plan, however, 47% either had not heard of the service or did not have any intention of applying. This group presents an opportunity to consider additional incentives to encourage the EverGreen rate such as an increased EV incentive or a limited-time discount off the EverGreen rate if customers acquire a program-eligible EV. Brand recognition and loyalty findings in this report suggest people are very happy with EverGreen service and this may spur more participation.
6. **Extend the program timeline.** Of survey respondents who did not redeem an incentive certificate, 16% said the program ended before they could acquire a vehicle.

Dealership Collaboration

1. **Assist dealers in program preparation and engage industry stakeholders (e.g., trade associations) in the dealer outreach process.** Both participating dealers and survey respondents suggested that model availability was a concern and dealers specifically struggled with maintaining inventory. Calculating projections for new vehicle sales can help dealers scale up in advance of the next program. Interviews with CSE's dealer engagement team revealed that the limitation of available discounts to only a few dealers can cause long-lasting inequities in EV inventory among non-participating dealerships. This is because OEMs allocate future inventory based on past sales. Engaging trade associations, like the California New Car Dealers Association, in the planning and identification of participating dealers will help to identify and mitigate any possible unintended consequences of the program, especially considering possible program expansions and increased EV redemption goals for future iterations of the program.

Program Administration

1. **Use a more sophisticated information technology platform.** Program staff reported that, despite improvements to tools and processes, the manual incentive process became insufficient to handle the increase in applications. Considering the possibility of further expansion of this program in the future, a more sophisticated system would be necessary to efficiently process applications, track applicant communications and provide quality assurance. This may require a longer lead time to program launch, but if the scale is sufficiently increased, it would provide economies of scale in terms of processing costs and save effort and budget on the tail end of the project for data processing and evaluation.

Outreach and Education

1. **Consider marketing and outreach strategies that target a broader audience.** Drive EverGreen 2.0 attracted an older, more educated audience to the program, hence the effectiveness of print and mail campaigns to attract program participants. The demographic profile of Drive EverGreen participants mirrors similar incentive programs, indicating that Drive EverGreen is attracting participants that have a proclivity toward EV adoption. While these strategies proved successful, SCP should consider the idea of enhancing their marketing strategy to expand the diffusion of EV

technology to a younger, more representative audience who may not be early adopters of new technology.

2. **Provide dealers and customers with more information on charger incentives.** Feedback from dealers and participants indicated a low level of knowledge about the free EV charger incentive program and a lack of resources to help redeemers understand it. Future participants may benefit from merging outreach and educational materials for Drive EverGreen and the free EV charger incentive so they can understand the programs' interconnectivity and better plan for participating in both. Open-ended survey responses recommended providing collateral that incorporates both programs and including lists of qualified electricians to install chargers.
3. **Promote average cost savings and vehicle ranges in promotional materials to overcome common barriers.** Through both iterations of Drive EverGreen, vehicle range and price have remained common barriers to participants not redeeming their incentives. Incorporating information about average vehicle cost savings and battery range, as well as promoting transparency through the SCP program dashboard, would allow consumers to make more informed projections of their potential savings. Using cost savings specific to the Drive EverGreen program also may mitigate frustration over perceived savings from other programs, specifically the federal tax credit that rarely equals the total possible \$7,500.

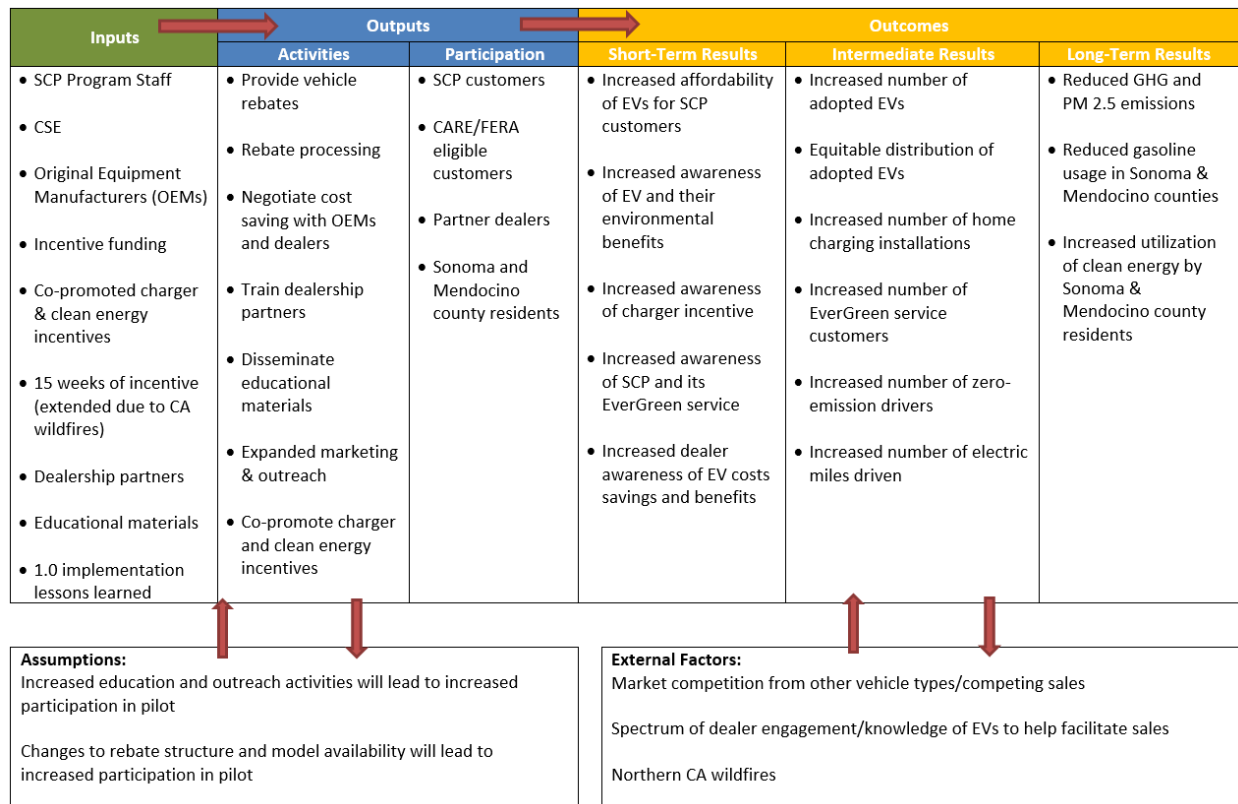
Evaluation

1. **Examine the geographic location of program participants in relation to SCP market share.** As noted previously, a majority of program participants were concentrated in specific cities in Sonoma County. Conducting geo-spatial analysis of certificate recipients in relation to overall SCP customers would help determine if participation rates are representative of SCP's customer base as well as identify ZIP codes that may have high SCP enrollment rates but low levels of Drive EverGreen participation.
2. **Collect redeemers' energy consumption data to analyze impacts to utility bills and the grid.** While this evaluation explored redeemers' perspectives on energy costs, analysis of actual consumption and cost data would better inform the program's impact on customer utility bills and the electrical grid. To assess this, SCP or future implementers could collect energy consumption data from participants before and after adoption of a clean vehicle. These consumption patterns and information about the adopted vehicle would enable evaluators to estimate the impact of adding a vehicle to a household's electricity bill compared to equivalent gasoline costs. These findings would be helpful in informing program design and the creation of educational materials moving forward.
3. **Consider additional methods for assessing direct and spillover program effects.** Anecdotal evidence collected via surveys and interviews seems to suggest that some market spillover effects (e.g., non-participating dealers offering competitive discounts) took place as a result of the Drive EverGreen program that may impact overall EV sales in Sonoma and Mendocino counties. However, the true impact of the program on wider sales is difficult to assess due to the presence of numerous confounding factors, including changes to statewide clean vehicle incentive programs like the CVRP; variations in the cost of fuel; the release of new, highly anticipated

models; and changes in vehicle supply at local dealerships. Though factors like these make it difficult to identify direct effects of the program, several approaches could be taken to understand impacts and spillover effects. For example, SCP or future implementers could poll SCP customers before and after implementation of its program (whether or not they participate in the program) to begin to measure changes in awareness of EVs and SCP's various programs. Additionally, acquiring vehicle registration data from a provider such as IHS Markit would enable evaluators to track vehicle registration volume, market share and distribution of clean vehicles in the areas. It would be difficult to claim any causation from a specific program, but it might be instructive for context.

- 4. Use caution when comparing GHG reduction estimates to other programs due to the variability in factors that impact savings.** Though this report has outlined the cost of the program with respect to emission reductions, additional evaluation of cost-effectiveness could be conducted by comparing emission reductions per dollar spent with other SCP programs. While useful for calculating overall impact, care should be taken in interpreting similarities and differences in emission reductions per dollar spent compared to programs administered in other areas, which can have very different electricity generation portfolios, socio-economic and consumer choice patterns, and consumer preferences for various vehicle features.

Appendix A: Program logic model



Appendix B: Survey instrument

Drive EverGreen 2.0 Participant Survey

Program Data Feed

**Hidden Value: certificatestatus**

Value: [invite("custom 2")]

Hidden Value: care_fera

Value: [invite("custom 3")]

Hidden Value: purchase_lease

Value: [invite("custom 4")]

Hidden Value: new_used

Value: [invite("custom 5")]

Hidden Value: model

Value: [invite("custom 6")]

Hidden Value: oem_discount

Value: [invite("custom 7")]

Hidden Value: scp_discount

Value: [invite("custom 8")]

Introduction

Logic: Hidden unless: certificatestatus is exactly equal to "unredeemed"

Welcome to the Sonoma Clean Power (SCP) Drive EverGreen Survey! You were invited to participate in this survey because you received a Drive EverGreen incentive certificate from SCP for the purchase/lease of an electric vehicle (EV) but did not redeem it. Because of your interest in the Drive EverGreen program, we would like to learn more about your experience making a decision about an EV.

Your participation is voluntary. However, your input will help us design the next EV program, so we encourage you to take 5–10 minutes and try to answer all of the questions. If you complete the survey, you will have the option to enter a drawing to win one of ten \$30 Amazon.com gift cards.

Your identity will remain confidential and all reported results will be anonymous. Your survey link is personalized and cannot be shared with others.

If you have questions about this research project or if you experience technical difficulties, you may contact the Center for Sustainable Energy:

Phone: 858-429-5158

Email: transparency@energycenter.org

Logic: Hidden unless: certificatestatus is exactly equal to "redeemed"

Welcome to the Sonoma Clean Power (SCP) Drive EverGreen Survey! You were invited to participate in this survey because you redeemed a Drive EverGreen Incentive Certificate from SCP for the purchase/lease of an electric vehicle (EV) and we would like to learn more about your experience making a decision about an EV.

Your participation is voluntary. However, your input will help us design the next EV incentive program, so we encourage you to take 10 minutes and try to answer all of the questions. If you complete the survey, you will have the option to enter a drawing to win one of ten \$30 Amazon.com gift cards.

Your identity will remain confidential and all reported results will be anonymous. Your link is personalized and cannot be shared with others.

If you have questions about this research project or if you experience technical difficulties, you may contact the Center for Sustainable Energy at:

Phone: 858-429-5158

Email: transparency@energycenter.org

Page entry logic: This page will show when: Invite Variable "custom2" is exactly equal to "unredeemed"

Vehicle Adoption Decisions

Logic: Show/hide trigger exists. **Hidden unless:** certificatestatus is exactly equal to "unredeemed"

1) You qualified for a Sonoma Clean Power Incentive Certificate for an electric vehicle through the Drive EverGreen program but never redeemed it. Why not? [select all that apply]

- ☐ The program ended before I could get a vehicle
- ☐ The incentive process was too complicated
- ☐ I couldn't afford an electric vehicle, even with the incentives
- ☐ The Drive EverGreen incentive amount was not enough to make it worth acquiring an EV
- ☐ I didn't like any of the vehicles available

- ☐ Available EVs did not meet my driving needs
- ☐ My preferred brand of manufacturer was not included in the program
- ☐ I didn't have reliable access to charging
- ☐ I decided an electric vehicle wasn't a good fit for me
- ☐ My circumstances changed (e.g., income, place of residence)
- ☐ I changed my mind about purchasing an EV
- ☐ Dealer was out of inventory
- ☐ I had an unsatisfying experience at the dealership
- ☐ Other , please specify: _____

Non-Adoption Reasons

Action: Custom Script: New Custom Script

Hidden Value: reasoncount

Value: [question("answer count"), id="15"]

Page entry logic: This page will show when: Invite Variable "custom2" is exactly equal to "unredeemed"

Vehicle Adoption Decisions

Logic: Hidden unless: reasoncount is greater than or equal to "2"

Piping: Piped Values From Question 1. (You qualified for a Sonoma Clean Power Incentive Certificate for an electric vehicle through the Drive EverGreen program but never redeemed it. Why not? [select all that apply])

2) What was the primary reason you did not redeem your certificate?

Validation: Must be numeric

Logic: Hidden unless: #1 Question "You qualified for a Sonoma Clean Power Incentive Certificate for an electric vehicle through the Drive EverGreen program but never redeemed it. Why not? [select all that apply]" is one of the following answers ("The Drive EverGreen incentive amount was not enough to make it worth acquiring an EV")

3) What Drive EverGreen incentive amount would have been enough for you to acquire an EV?

Why?:

Vehicle Adoption Decisions

Logic: Show/hide trigger exists. Hidden unless: certificatestatus is exactly equal to "unredeemed"

4) What are your current vehicle shopping plans?

- ☐ I purchased/leased a different vehicle
 - ☐ I am still planning to purchase/lease a vehicle, but haven't yet
 - ☐ I have decided to keep my current vehicle
 - ☐ I don't currently have a car and have no plan to purchase/lease one
-

Page entry logic: This page will show when: Invite Variable "custom2" is exactly equal to "unredeemed"

Vehicle Adoption Decisions

Logic: Hidden unless: #4 Question "What are your current vehicle shopping plans?" is one of the following answers ("I purchased/leased a different vehicle")

5) What type of vehicle did you purchase/lease?

- ☐ Gasoline-fueled vehicle
- ☐ Conventional hybrid (fueled with gasoline only)

- ☐ Plug-in hybrid EV (recharged with electricity and/or fueled with gasoline)
- ☐ All-battery EV (recharged with electricity only)
- ☐ Hydrogen fuel-cell vehicle
- ☐ Diesel/Biodiesel-fueled vehicle
- ☐ Other alternative fuel-powered vehicle

Logic: Hidden unless: #4 Question "What are your current vehicle shopping plans?" is one of the following answers ("I am still planning to purchase/lease a vehicle, but haven't yet")

6) What type of vehicle are you most likely to purchase/lease?

- ☐ Gasoline-fueled vehicle
- ☐ Conventional hybrid (fueled with gasoline only)
- ☐ Plug-in hybrid EV (recharged with electricity and/or fueled with gasoline)
- ☐ All-battery EV (recharged with electricity only)
- ☐ Hydrogen fuel-cell vehicle
- ☐ Diesel/Biodiesel-fueled vehicle
- ☐ Other alternative fuel-powered vehicle

Logic: Hidden unless: #4 Question "What are your current vehicle shopping plans?" is one of the following answers ("I have decided to keep my current vehicle")

7) What type of vehicle did you decide to keep?

- ☐ Gasoline-fueled vehicle
- ☐ Conventional hybrid (fueled with gasoline only)
- ☐ Plug-in hybrid EV (recharged with electricity and/or fueled with gasoline)
- ☐ All-battery EV (recharged with electricity only)
- ☐ Hydrogen fuel-cell vehicle
- ☐ Diesel/Biodiesel-fueled vehicle
- ☐ Other alternative fuel-powered vehicle

Adoption Motivations

Logic: Hidden unless: (certificatestatus is exactly equal to "redeemed" OR #5 Question "What type of vehicle did you purchase/lease?" is one of the following answers ("Plug-in hybrid EV (recharged with electricity and/or fueled with gasoline)","All-battery EV (recharged with electricity only)))

8) How important were the following factors in your decision to purchase/lease an EV?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Saving money	()	()	()	()	()
Reducing environmental impacts	()	()	()	()	()
Carpool or High Occupancy Vehicle (HOV) lane access	()	()	()	()	()
Increased energy independence	()	()	()	()	()
Convenience of charging	()	()	()	()	()
Vehicle performance	()	()	()	()	()
Vehicle styling, finish, and comfort	()	()	()	()	()
A desire for the newest technology	()	()	()	()	()

Logic: Hidden unless: certificatestatus is exactly equal to "redeemed"

9) How important were each of the following in making it possible for you to adopt an EV?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
State vehicle rebate (CVRP)	()	()	()	()	()
Federal tax incentives	()	()	()	()	()
Drive EverGreen incentive certificate	()	()	()	()	()
Drive EverGreen dealer/manufacturer discounts	()	()	()	()	()
Clean Charge EV charging equipment incentive	()	()	()	()	()

Logic: Hidden unless: certificatestatus is exactly equal to "redeemed"

10) Which of the following best describes the vehicles you plan to purchase/lease in the future?

- () I will only purchase/lease EVs in the future
- () I will mostly purchase/lease EVs in the future
- () I will purchase/lease EVs and gasoline-fueled vehicles about equally in the future
- () I will mostly purchase/lease gasoline-fueled vehicles in the future
- () I will only purchase/lease gasoline-fueled vehicles in the future
- () I'm not sure

Logic: Hidden unless: (#6 Question "What type of vehicle are you most likely to purchase/lease?" is one of the following answers ("Plug-in hybrid EV (recharged with

electricity and/or fueled with gasoline)","All-battery EV (recharged with electricity only)")
AND Invite Variable "custom2" is exactly equal to "unredeemed")

11) How important are the following factors when you are considering whether to purchase/lease an EV?

	Not at all important	Slightly important	Moderately important	Very important	Extremely important
Saving money	()	()	()	()	()
Reducing environmental impacts	()	()	()	()	()
Carpool or High Occupancy Vehicle (HOV) lane access	()	()	()	()	()
Increased energy independence	()	()	()	()	()
Convenience of charging	()	()	()	()	()
Vehicle performance	()	()	()	()	()
Vehicle styling, finish, and comfort	()	()	()	()	()
A desire for the newest technology	()	()	()	()	()

Logic: Hidden unless: ((certificatestatus is exactly equal to "unredeemed" AND #4 Question "What are your current vehicle shopping plans?" is one of the following answers

("I am still planning to purchase/lease a vehicle, but haven't yet", "I have decided to keep my current vehicle", "I don't currently have a car and have no plan to purchase/lease one")) OR #5 Question "What type of vehicle did you purchase/lease?" is one of the following answers ("Gasoline-fueled vehicle", "Conventional hybrid (fueled with gasoline only)", "Diesel/Biodiesel-fueled vehicle", "Other alternative fuel-powered vehicle"))

12) To what extent is each of the following a barrier to purchasing or leasing an electric vehicle for you?

	Not at all a barrier	A minor barrier	A moderate barrier	A major barrier	An overwhelming barrier
Vehicle price	()	()	()	()	()
Cost of electricity for charging	()	()	()	()	()
Vehicle range on a single charge	()	()	()	()	()
Frequency of battery replacement	()	()	()	()	()
Time required to recharge	()	()	()	()	()
Access to reliable charging	()	()	()	()	()
Reliability of the technology	()	()	()	()	()
Vehicle repair costs	()	()	()	()	()

Vehicle safety records	()	()	()	()	()
Availability of desired vehicle models and body styles	()	()	()	()	()

If you have experienced any other major barriers to purchasing or leasing an electric vehicle that are not listed above, please describe them here.:

Page entry logic: This page will show when: Invite Variable "custom2" is exactly equal to "redeemed"

Incentive Effect

Logic: Hidden unless: Invite Variable "custom5" is exactly equal to "new"

As a reminder, through Drive EverGreen, you:

- Redeemed a **Drive EverGreen incentive certificate from SCP** for \$[invite('custom 8')] off the [invite('custom 4')] of a [invite('custom 5')] [invite('custom 6')] and,
- Received a **dealer/manufacture discount** of \$[invite('custom 7')]

In the following questions, please consider the **Drive EverGreen incentive certificate from SCP** and **dealer/manufacture discounts** separately

Logic: Hidden unless: Invite Variable "custom5" is exactly equal to "used"

As a reminder, through Drive EverGreen, you:

- Redeemed a **Drive EverGreen incentive certificate from SCP** for \$[invite('custom 8')] off the [invite('custom 4')] of a [invite('custom 5')] [invite('custom 6')]

Logic: Hidden unless: Invite Variable "custom5" is exactly equal to "used"

13) If the Drive EverGreen incentive certificate from SCP had NOT been available, what would you have done?

- ☐ Purchased/leased the same EV I got through Drive EverGreen
- ☐ Purchased/leased a different vehicle: all-battery EV
- ☐ Purchased/leased a different vehicle: plug-in hybrid EV
- ☐ Purchased/leased a different vehicle: conventional hybrid
- ☐ Purchased/leased a different vehicle: non-hybrid gasoline-fueled vehicle
- ☐ Not purchased/leased a vehicle
- ☐ Other, please specify: _____

Logic: Hidden unless: Invite Variable "custom5" is exactly equal to "new"

14) If the Drive EverGreen incentive certificate from SCP had NOT been available, but the dealer/manufacturer discounts were, what would you have done?

- ☐ Purchased/leased the same EV I got through Drive EverGreen
- ☐ Purchased/leased a different vehicle: all-battery EV
- ☐ Purchased/leased a different vehicle: plug-in hybrid EV
- ☐ Purchased/leased a different vehicle: conventional hybrid
- ☐ Purchased/leased a different vehicle: non-hybrid gasoline-fueled vehicle
- ☐ Not purchased/leased a vehicle
- ☐ Other, please specify: _____

Logic: Hidden unless: Invite Variable "custom5" is exactly equal to "new"

15) If the dealer/manufacturer discounts had NOT been available, but the Drive EverGreen incentive certificate from SCP was, what would you have done?

- ☐ Purchased/leased the same EV I got through Drive EverGreen
- ☐ Purchased/leased a different vehicle: all-battery EV
- ☐ Purchased/leased a different vehicle: plug-in hybrid EV
- ☐ Purchased/leased a different vehicle: conventional hybrid
- ☐ Purchased/leased a different vehicle: non-hybrid gasoline-fueled vehicle
- ☐ Not purchased/leased a vehicle

☐ Other, please specify: _____

Logic: Hidden unless: Invite Variable "custom5" is exactly equal to "new"

16) If neither the dealer/manufacturer discounts nor the Drive EverGreen incentive certificate from SCP had been available, what would you have done?

- ☐ Purchased/leased the same EV I got through Drive EverGreen
- ☐ Purchased/leased a different vehicle: all-battery EV
- ☐ Purchased/leased a different vehicle: plug-in hybrid EV
- ☐ Purchased/leased a different vehicle: conventional hybrid
- ☐ Purchased/leased a different vehicle: non-hybrid gasoline-fueled vehicle
- ☐ Not purchased/leased a vehicle
- ☐ Other, please specify: _____

Page entry logic: This page will show when: Invite Variable "custom2" is exactly equal to "redeemed"

Household Vehicle Composition

Logic: Show/hide trigger exists.

17) Which of the following best describes your EV purchase or lease?

- ☐ It replaced, or will replace, another household vehicle
- ☐ It is an additional vehicle to my household
- ☐ It is the first vehicle acquired by my household

(untitled)

Logic: Hidden unless: #17 Question "Which of the following best describes your EV purchase or lease?" is one of the following answers ("It replaced, or will replace, another household vehicle")

18) Please describe the vehicle you replaced (or will replace) with your EV.

Technology Type

- ☐ Non-hybrid gasoline-fueled vehicle
- ☐ Conventional hybrid (fueled with gasoline only)
- ☐ Plug-in hybrid EV (recharged with electricity and/or fueled with gasoline)
- ☐ All-battery EV (recharged with electricity only)
- ☐ Hydrogen fuel-cell vehicle
- ☐ Diesel/Biodiesel-fueled vehicle
- ☐ Other alternative fuel-powered vehicle

Body style

- ☐ Compact Car



- ☐ Midsize Car



- ☐ Fullsize Car



- ☐ Small/midsize SUV



- ☐ Fullsize SUV



- ☐ Pickup truck



- ☐ Minivan



Model Year

- ☐ MY 2017
- ☐ MY 2016
- ☐ MY 2015
- ☐ MY 2014
- ☐ MY 2013

- ☐ MY 2012
- ☐ MY 2011
- ☐ MY 2010
- ☐ MY 2009
- ☐ MY 2008
- ☐ MY 2007
- ☐ MY 2006
- ☐ MY 2005
- ☐ MY 2004
- ☐ MY 2003
- ☐ MY 2002
- ☐ MY 2001
- ☐ MY 2000
- ☐ MY 1999 or earlier

Logic: Hidden unless: #17 Question "Which of the following best describes your EV purchase or lease?" is one of the following answers ("It replaced, or will replace, another household vehicle")

19) What did you do, or are you planning to do, with your old vehicle?

- ☐ I traded it in to the dealership when I purchased/leased my incentivized EV
- ☐ I sold it, or will sell it, privately to a new owner
- ☐ I donated, or will donate, the vehicle
- ☐ I gave, or will give, the vehicle to someone I know
- ☐ I scrapped, or will scrap, the vehicle
- ☐ I damaged/totaled my old vehicle in a car accident
- ☐ I lost my old vehicle in the Northern California wildfires
- ☐ I haven't decided yet
- ☐ Other, please specify:

Logic: Show/hide trigger exists. Hidden unless: #17 Question "Which of the following best describes your EV purchase or lease?" is one of the following answers ("It replaced, or will replace, another household vehicle", "It is an additional vehicle to my household")

20) Not including your newly acquired EV, how many vehicles do you currently have in your household?

- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4 or more

Page entry logic: This page will show when: Invite Variable "custom2" is exactly equal to "redeemed"

Household Vehicle Composition

Logic: Show/hide trigger exists. Hidden unless: #20 Question "Not including your newly acquired EV, how many vehicles do you currently have in your household?" is one of the following answers ("1", "2", "3", "4 or more")

21) How many of these additional vehicles in your household are gasoline-fueled? (not including conventional or plug-in hybrids)

- ☐ 0
- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4 or more

Logic: Hidden unless: #21 Question "How many of these additional vehicles in your household are gasoline-fueled? (not including conventional or plug-in hybrids)" is one of the following answers ("1", "2", "3", "4 or more")

22) Will your newly acquired EV serve as your primary vehicle?

- ☐ Yes
- ☐ No

Logic: Hidden unless: #21 Question "How many of these additional vehicles in your household are gasoline-fueled? (not including conventional or plug-in hybrids)" is one of the following answers ("1","2","3","4 or more")

23) What tasks do you primarily use your gasoline-powered vehicle/s for (Select all that apply)?

☐ Taking long trips

☐ Running errands

☐ Commuting to work

☐ Other, please specify: _____

Validation: Must be numeric

24) On average, about how many miles do you think you will be driving your EV?

On a typical workday:: _____

On a typical non-work day:: _____

Validation: Min = 0 Max = 100

25) About what percentage of your total miles driven will be in your EV?

0 _____ ☐ _____ 100

Validation: Min = 0 Max = 100

26) About what percentage of your total EV driving will you be doing within Sonoma or Mendocino counties?

0 _____ ☐ _____ 100

Page entry logic: This page will show when: Invite Variable "custom2" is exactly equal to "redeemed"

Validation: Max character count = 500

Logic: Hidden unless: Invite Variable "custom5" is exactly equal to "used"

27) What led you to purchase a used EV as opposed to a new one?

Page entry logic: This page will show when: Invite Variable "custom2" is exactly equal to "redeemed"

EV Charging and Usage

28) Do you have easy access to any of the following EV charging options?

	Yes	No	Not sure
Electrical outlet at home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Charging station at home	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Electrical outlet at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Charging station at work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Charging station near home or work	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

29) Please rank the following EV charging methods in order of how frequently you use them. If you do not use a method, leave it in the left-hand column

_____ At home during the day
_____ At home during the evening
_____ At home overnight
_____ At work
_____ At a public charging station
_____ Other

If you selected Other, please specify here::

30) Since acquiring your EV, which of the following best describes the changes you have noticed in your electric utility bill?

- ☐ My electric utility bill has significantly decreased
- ☐ My electric utility bill has marginally decreased
- ☐ My electric utility bill has not changed significantly
- ☐ My electric utility bill has marginally increased
- ☐ My electric utility bill has significantly increased
- ☐ I am not sure

Validation: Must be numeric

Logic: Hidden unless: (#17 Question "Which of the following best describes your EV purchase or lease?" is one of the following answers ("It replaced, or will replace, another household vehicle") AND Question "Technology Type" is one of the following answers ("Non-hybrid gasoline-fueled vehicle", "Conventional hybrid (fueled with gasoline only)", "Diesel/Biodiesel-fueled vehicle", "Other alternative fuel-powered vehicle"))

31) Approximately how much money did you spend per week on fueling the vehicle you replaced?

32) Do you drive for any rideshare companies (e.g., Uber, Lyft)?

- ☐ Yes
- ☐ No

Page entry logic: This page will show when: #32 Question "Do you drive for any rideshare companies (e.g., Uber, Lyft)?" is one of the following answers ("Yes")

EV Charging and Usage

33) Which of the following rideshare companies do you drive for? [select all that apply]

☐ Uber

☐ Lyft

☐ Other, please specify: _____

Logic: Show/hide trigger exists.

34) Do you use/plan to use your newly acquired EV as a rideshare vehicle?

☐ Yes

☐ No

Validation: Must be numeric

Logic: Hidden unless: #34 Question "Do you use/plan to use your newly acquired EV as a rideshare vehicle?" is one of the following answers ("Yes")

35) Approximately how many miles do you drive a week providing rideshare services?

Program Awareness and Impressions

36) How did you hear about Sonoma Clean Power's Drive EverGreen program? [select all that apply]

☐ Sonoma Clean Power website

☐ Drive EverGreen website

☐ Mailer from Sonoma Clean Power

- ☐ Word of mouth (friend, relative, co-worker)
 - ☐ Community event/Display vehicle
 - ☐ Participating dealerships
 - ☐ Social media (Facebook, Instagram, Twitter)
 - ☐ TV commercial
 - ☐ Radio advertisement
 - ☐ Email advertisement
 - ☐ Online advertisement
 - ☐ Email from my employer
 - ☐ Other, please specify: _____
-

Marketing Count

Action: Custom Script: New Custom Script

Hidden Value: marketingcount

Value: [question("answer count"), id="58"]

Page entry logic: This page will show when: marketingcount is greater than or equal to "2"

Program Awareness and Impressions

Piping: Piped Values From Question 36. (How did you hear about Sonoma Clean Power's Drive EverGreen program? [select all that apply])

37) In which way did you FIRST hear of the Drive EverGreen program?

Program Awareness and Impressions

38) Which of the following best describes your awareness of electric vehicles (EVs) before learning about the Drive EverGreen program?

- ☐ I had no idea EVs existed
- ☐ I knew about EVs, but didn't know enough to make a decision about getting one
- ☐ I knew enough about EVs to make an informed decision about getting one

39) Had you heard about Sonoma Clean Power before learning about the Drive EverGreen program?

- ☐ Yes
- ☐ No

40) On a scale of 0-10, how likely are you to recommend Sonoma Clean Power to a friend?

Not at all likely

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Extremely likely

Page entry logic: This page will show when: Invite Variable "custom2" is exactly equal to "redeemed"

Program Awareness and Impressions

41) On a scale of 0-10, how likely are you to recommend Drive EverGreen to a friend?

Not at all likely

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Extremely likely

Logic: Show/hide trigger exists.

42) Are you familiar with Sonoma Clean Power's CleanCharge

incentive program that provides free EV chargers?

- ☐ No, I am not familiar with the CleanCharge program
- ☐ Yes, and I have already applied
- ☐ Yes, and I plan to apply
- ☐ Yes, but I have no intention of applying

Logic: Hidden unless: #42 Question "Are you familiar with Sonoma Clean Power's CleanCharge incentive program that provides free EV chargers?" is one of the following answers ("Yes, and I have already applied", "Yes, and I plan to apply", "Yes, but I have no intention of applying")

43) Did you hear about the CleanCharge program through your participation in Drive EverGreen?

- ☐ Yes
- ☐ No, I heard about it elsewhere

Logic: Hidden unless: #42 Question "Are you familiar with Sonoma Clean Power's CleanCharge incentive program that provides free EV chargers?" is one of the following answers ("Yes, and I have already applied")

44) On a scale of 0-10, how likely are you to recommend the CleanCharge program to a friend?

Not at all likely

- ☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Extremely likely

Logic: Show/hide trigger exists.

45) Are you familiar with the EverGreen service (100% renewable energy) offered by Sonoma Clean Power?

- ☐ No, I am not familiar with the EverGreen service
- ☐ Yes, I am already on the EverGreen service
- ☐ Yes, and I am planning to switch to the EverGreen service

☐ Yes, but I have no intention of switching to the EverGreen service

Logic: Hidden unless: #45 Question "Are you familiar with the EverGreen service (100% renewable energy) offered by Sonoma Clean Power?" is one of the following answers ("Yes, I am already on the EverGreen service", "Yes, and I am planning to switch to the EverGreen service", "Yes, but I have no intention of switching to the EverGreen service")

46) Did you hear about the EverGreen service through your participation in Drive EverGreen?

☐ Yes

☐ No, I heard about it elsewhere

Logic: Hidden unless: #45 Question "Are you familiar with the EverGreen service (100% renewable energy) offered by Sonoma Clean Power?" is one of the following answers ("Yes, I am already on the EverGreen service")

47) On a scale of 0-10, how likely are you to recommend EverGreen service to a friend?

Not at all likely

☐ 0 ☐ 1 ☐ 2 ☐ 3 ☐ 4 ☐ 5 ☐ 6 ☐ 7 ☐ 8 ☐ 9 ☐ 10

Extremely likely

48) Are you familiar with each of the following?

	No, I am not familiar	Yes, and I already applied	Yes, and I plan to apply	Yes, but have no intention of applying
State vehicle rebate (CVRP)	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
Federal tax incentives for EVs	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Page entry logic: This page will show when: Invite Variable "custom2" is exactly equal to "redeemed"

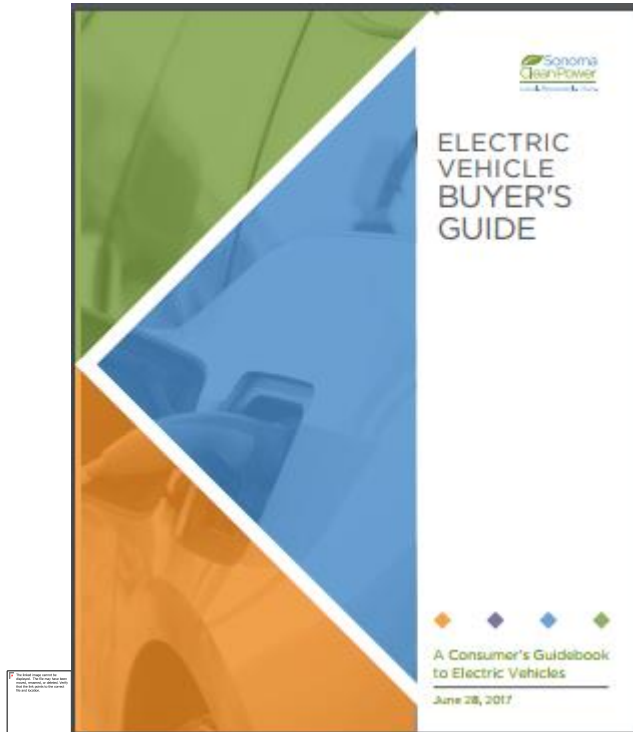
Program Awareness and Impressions

49) How satisfied were you with each of the following aspects of the Drive EverGreen program?

	Not at all satisfied	Slightly satisfied	Moderately satisfied	Very satisfied	Extremely satisfied
Promotion and outreach	()	()	()	()	()
Website and other materials	()	()	()	()	()
Simplicity of the program	()	()	()	()	()
Amount of the Drive EverGreen incentive certificate	()	()	()	()	()
Amount of the dealer/manufacturer discount	()	()	()	()	()
Level of customer service/support provided by Sonoma Clean Power	()	()	()	()	()

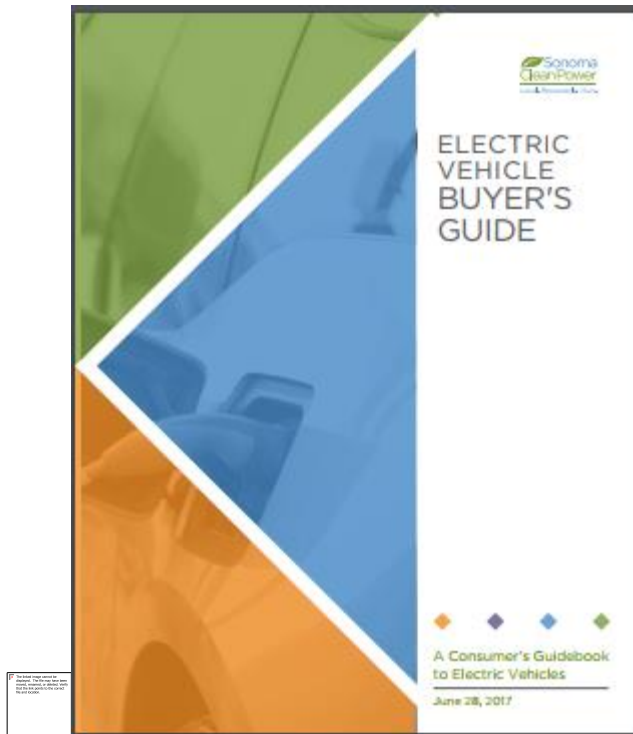
Logic: Show/hide trigger exists.

50) Did you receive a copy of the Electric Vehicle Driver's Guide from the dealer where you purchased/leased your EV?



- ☐ Yes
- ☐ No
- ☐ Not Sure

Logic: Hidden unless: #50 Question "Did you receive a copy of the Electric Vehicle Driver's Guide from the dealer where you purchased/leased your EV?"



" is one of the following answers ("Yes")

51) Please rate your level of agreement with the following statement:

The Electric Vehicle Buyer's Guide taught me about the benefits of owning an EV.

- ☐ Strongly disagree
- ☐ Disagree
- ☐ Neither agree nor disagree
- ☐ Agree
- ☐ Strongly agree

Demographics and Household

Logic: Hidden unless: certificatestatus is exactly equal to "unredeemed"

In this final section we will be asking some questions about you and your household. This information will remain confidential.

Logic: Hidden unless: certificatestatus is exactly equal to "redeemed"

In this final section we will be asking some questions about you and your household so we can learn more about the characteristics of EV adopters in Sonoma County. This information will remain confidential.

52) Do you own or rent your residence?*

- ☐ Rent
- ☐ Own
- ☐ Prefer not to answer

53) What type of residence do you live in?*

- ☐ Detached house (single family home)
- ☐ Attached house (townhome, duplex, triplex)
- ☐ Apartment/condominium
- ☐ Other, please specify:: _____
- ☐ Prefer not to answer

54) Including yourself, how many people live in your household?*

- ☐ 1
- ☐ 2
- ☐ 3
- ☐ 4
- ☐ 5
- ☐ 6
- ☐ 7
- ☐ 8 or more
- ☐ Prefer not to answer

55) What is your age?*

- ☐ 16–20
- ☐ 21–29
- ☐ 30–39

- ☐ 40–49
- ☐ 50–59
- ☐ 60–69
- ☐ 70–79
- ☐ 80+
- ☐ Prefer not to answer

56) How do you prefer to describe your gender?*

- ☐ Female
- ☐ Male
- ☐ Not listed:: _____
- ☐ Prefer not to answer

57) What is the highest level of education you have completed?*

- ☐ 12th grade or less
- ☐ High school graduate or equivalent
- ☐ Some college, no degree
- ☐ Associate's degree
- ☐ Bachelor's degree
- ☐ Postgraduate degree
- ☐ Prefer not to answer

58) Which option best describes your total annual household income from all sources before taxes?*

- ☐ Less than \$25,000
- ☐ \$25,000 to \$49,999
- ☐ \$50,000 to \$74,999
- ☐ \$75,000 to \$99,999
- ☐ \$100,000 to \$124,999
- ☐ \$125,000 to \$149,999
- ☐ \$150,000 to \$174,999
- ☐ \$175,000 to \$199,999
- ☐ \$200,000 to \$249,999

- ☐ \$250,000 to \$299,999
- ☐ \$300,000 to \$399,999
- ☐ \$400,000 to \$499,999
- ☐ \$500,000 or more
- ☐ Prefer not to answer

59) How do you prefer to describe your racial/ethnic identity? [select all that apply]*

- ☐ Black or African American
 - ☐ East Asian
 - ☐ Latino/a or Hispanic
 - ☐ Middle Eastern
 - ☐ Native American or Alaska Native
 - ☐ Native Hawaiian or other Pacific Islander
 - ☐ South Asian
 - ☐ White or Caucasian
 - ☐ Other, please specify: _____
 - ☐ Prefer not to answer
-

Final Page

Validation: Max character count = 500

60) Please provide any feedback you have on the Drive EverGreen program in the box below. We are especially interested in how we can better support EV adoption in Sonoma and Mendocino counties.

Validation: Max character count = 500

61) What types of programs or services (other than Drive EverGreen) would you recommend that SCP provide in the future to reduce greenhouse gas emissions?

62) If you would like to be entered for a chance to win a \$30 Amazon.com gift card, please enter your contact information below before clicking “Submit” and completing this survey.

We will only use your information to contact you if you are a winner. Gift card winners will be notified within the next 6-8 weeks.

First Name: _____

Last Name: _____

Validation: %s format expected

Email Address: _____

Phone Number: _____

Thank You!

Thank you for taking our survey. Your response is very important to us.

If you have questions about this research project or if you experience technical difficulties, you may contact the Center for Sustainable Energy:

Phone: 858-634-4733

Email: transparency@energycenter.org

Appendix C: Dealer interview protocol

Opening of Interview

Before you begin the interview, please be sure to do the following:

1. Introduce yourself and your role at CSE and on this project.
2. Thank your participant and encourage them to be open and honest – their feedback is important for the development of the program.
3. Tell your participant that the conversation will **not** be recorded, but that detailed notes will be taken, which will be summarized in a report with program recommendations.
4. Remind your participant that their personal details will not be revealed.
5. Confirm that they have your contact information, should they wish to follow up for any reason.

Dealer Interview Questions

These questions are intended to provide guidelines for semi-structured interviews. Slight deviations from the text to maintain a conversational tone are acceptable. This might include skipping parts of a question if the respondent has adequately addressed it already, or probing for additional information if the response seems inadequate.

1. Could you start by briefly describing your role at your dealership and your involvement with the Drive EverGreen program?
2. Did you participate in the Drive EverGreen trainings that Sonoma Clean Power conducted before the launch of the program?
 - a. Yes
 - b. No

If yes, please share your thoughts on the training. Do you feel you and your staff were adequately prepared to participate in the program at your dealership? Why or why not?

3. What additional training or support from SCP would have been helpful while participating in Drive EverGreen?
4. Did you participate in Drive EverGreen marketing events/activities during the program?
 - a. Yes
 - b. No

If yes, please share your thoughts on how effective these marketing events were.

6. How did you disseminate training or other program communications to your staff?
5. In what other ways did you promote the Drive EverGreen incentive to your customers?
6. Has your dealership offered manufacturer/dealer discounts for EVs in the past or plan to in the future? What role did your partnership with SCP play in the offering of the incentives? Did you offer manufacturer or dealer incentives to non-SCP customers?
7. How do you think Drive EverGreen affected sales at your dealership?

8. What recommendations might you have to improve the Drive EverGreen experience for participating dealers in the future?
9. What recommendations might you have to improve the Drive EverGreen experience for customers in the future?
10. If Sonoma Clean Power runs a similar program in the future, how likely is your dealership to participate? Why?
11. Do you have any other feedback or input you would like to provide at this time?

Nissan/BMW Dealers Only

12. In the first round of Drive EverGreen, there were only two participating dealers. How do you feel the increase in the number of participating dealers impacted your dealer's participation in Drive EverGreen this time around?
13. What was your experience offering incentives for used EVs? What factors would lead you to offer used EVs to customers over new? What successes or challenges did you face selling incentivized used EVs?



As a mission-driven nonprofit organization, CSE works with energy policymakers, regulators, public agencies and businesses as an expert implementation partner and trusted information resource. Together, we are the catalysts for sustainable energy market development and transformation.

HEADQUARTERS

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